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Medical Times

A Monthly Journal of Medicine, Surgery and the Collateral Sciences

Published by THE MEDICAL TIMES COMPANY at 95 Nassau Street

VOL. LI., No. 12 NEW YORK, DECEMBER, 1923 Twenty Cents a Copy Two Dollars a Year

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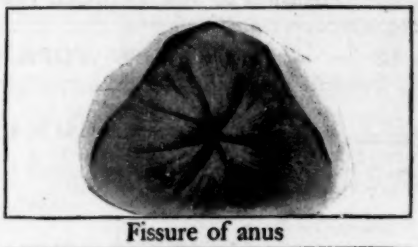
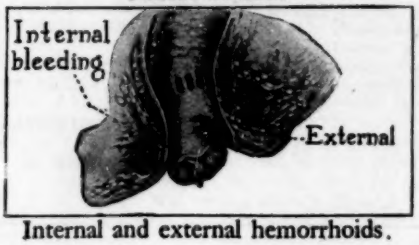


Fissure of anus

Cryptitis (focus of infection)



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A Monthly Journal of Medicine, Surgery, and the Collateral Sciences

Vol. LI., No. 12 | New York, December 1923 | Twenty Cents a Copy Two Dollars a Year

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Ergophobia: The Lazy Man's Disease

I. L. NASCHER, M.D.

New York

There is such a thing—a morbid fear of work, which is technically called ergophobia or ergasiophobia. The latter term is applied more specifically to a morbid fear of operating surgically, while ergophobia deals with the fear of work generally. While the fear of work is quite common among the class called derelicts, it is generally looked upon as a vice, rarely ever as a disease.

As physician of the New York Municipal Lodging House, the largest Refuge for the Homeless in the world, I made nearly 100,000 examinations of about 22,000 individuals in the year 1922. In more than 70 per cent of the examinations physical defects were found which handicapped the individuals to such extent that they were unable to hold their jobs. Special examinations were made from time to time to determine the prevalence of particular forms of defects and diseases in the class of men that made up the bulk of the lodgers. At these special examinations it was found that over 50% had pyorrhoea and 33⅓% had lower limb defects or hernia. Among these last there was a natural fear of work involving much standing or walking and in the hernia cases there was also the fear of work requiring lifting, straining and work in which both hands were simultaneously employed. In dealing with the problem of the derelict this medical feature has never been considered and as it is the basic cause for his apparent laziness, shiftlessness and lack of ambition, the problem of how to deal with him has never been successfully solved.

While the fear of certain kinds of work for which an individual is apparently fitted is natural if that individual has a physical defect which interferes with such work, there are some persons who have no physical defects yet are afraid of all kinds of work. Many of those who have varicose veins, flat feet and similar defects do not realize that these defects are responsible for their rapid fatigue and distress when standing or walking, nor does the public know that their apparent laziness and shiftlessness are due to physical defects. This, however, is not the class covered by this paper. The ergophobiac has no apparent or discoverable cause for his dread of work and his reluctance to make any physical exertion except what is required for self preservation. Even such exertion is performed only under the stimulus of the greater fear of death. One of these individuals when asked if he had no ambition, no aim in life, said, "yes; to keep alive with the least effort."

Those who study the non-criminal derelicts and social outcasts divide them into three classes: hobo or tramp, bum or drunkard and panhandler or beggar. From a scientific standpoint the tramp is a person suffering from a morbid impulse to get away from the place in which he happens to be. This impulse comes on suddenly and at irregular intervals, and the tramp starts off without any selected route or destination. He is not afraid of work but he does not remain long enough in any one place to learn a remunerative vocation and for the same reason he does not save enough to keep him in food and clothing when on the road. The drunkard is suffering from dipsomania, as real a disease condition as is drug addiction. The beggar is not the victim of a disease but of a vice akin to gambling and speculating, appealing to the sympathy instead of the cupidity of the public for funds. All three classes are economic burdens, the value of their production being less than the value of their consumption. There is however another type of derelict and economic burden which has never been separated and classified, namely the ergophobiac. This individual does not suffer from "wanderlust", may be a drinker but is not a bum, and he seldom makes street begging a regular vocation although he is sometimes forced to beg to get a meal. He has an extreme aversion to labor and is afraid to do anything that would re-

quire muscular effort. In the eyes of the public he is lazy, shiftless, good-for-nothing. Yet that laziness is really due to an abnormal mental condition, an unnatural fear of something unknown, an undefinable anxiety and an intense aversion to physical activity. Occasionally there is a fear that has a more or less rational basis, as the fear of injury or impairment of health, of debasement, of failure or some other factor that would cause a natural fear but in the case of the ergophobiac it is impossible to convince him that the fear is groundless. In some cases this fear comes on suddenly, in others it develops gradually, while some individuals exhibit at times extraordinary energy and at other times a determined opposition to any form of labor or an apathy from which they cannot be roused.

The description of a few cases may give a better picture of this condition than generalities. A man, age forty, has been coming to the Municipal Lodging House at irregular intervals for years. From a superficial observation he might be placed in any one of the three recognized classes of derelicts. He sometimes goes on the road as a tramp but there is no morbid impulse to get away and when he does go he has a definite goal which he wants to reach in the shortest time and with the least effort. He drinks occasionaly but not because he likes or has a craving for liquor. He never bought a drink for himself and drinks only when it is offered to him. He begs occasionally but rarely gets enough by begging to buy a meal. He depends mostly upon the free meals and clothes that are handed out by tender-hearted and soft-headed would-be philanthropists. Questioned about his aversion to work he said he hurt his back many years ago while lifting a box from the side walk to a wagon. After that he was afraid of any task which might cause a recurrence of the injury and gradually he became afraid of all work, even the simple work of carrying a sign being performed with a constant dread that something would happen to him. Under the threat that he would be barred from the Lodging House if he did not take a job shovelling snow when men were wanted to clear the streets one day last winter, he applied for work and was given a shovel. He pushed it into a snow pile but as he was about to lift it up the fear that he might hurt his back became so strong that he left the shovel in the snow and walked away. There was no question about the truth of his statements. An hour's work meant food and shelter for a day; a day's work meant food and shelter for a week. He was already barred from several free night shelters and now he would be barred from the last resort, the Lodging House, unless he could show that he had done at least an hour's work. He said he thought of these things before he threw up the job but he could not overcome the fear of injury if he lifted the shovel of snow. In this case the fear of work had a rational basis.

In the following case no cause or explanation can be found. The man had been a caulker for over ten years and made a good living. He had always been an efficient worker but for no apparent reason he began to lose force and speed in his work. He could not detect any change in himself and it seemed to him that his fellow workers were working faster than they did formerly. When his slow work retarded the others he was discharged. The work now became obnoxious and although he continued to go to the dry-docks where he was formerly employed he would not ask to be reinstated. He gradually developed a dislike of all work and finally a fear of work. He says now the thought of work makes him sick. Once, when sentenced to the work house as a vagrant, the fear of work produced chills, a cold sweat, nausea, vomiting and finally collapse and he was removed to the infirmary. Here his symptoms disappeared but they returned the first time that he was sent out with a gang and he spent the rest of the period of his commitment in the hospital ward. He comes to the Lodging House only as a last resort for he knows that he will be obliged to do some work there before he will be permitted to lea e in the morning. He looks forward to this with the feeling that he must undergo some terrible ordeal and he is prepared for it. He goes through his alloted task in the morning as fast as possible in order to get away from work at the earliest possible moment. He knows that he is not like other men who have ambition and energy and work for their livlihood. Years of inactivity have made him fat, flabby and apathetic and only the greater fear of death will rouse in him the energy to do something that might give him food. His usual occupation now is "sandwich man", carrying a sign on his chest and another on his back.

These two cases are cases of true ergophobia. There are many who will not work because they fear the result of work, a fear of physical distress or harm, the fear of failure, a fear that work will detract from their social standing in the low stratum of society in which they live. Some feel a sense of humiliation or degradation in working for another, in being a servant to a master. In these cases there is no fear of work itself as in the second case described or a fear of all kinds of work through fear of physical harm as in the first case. Those who fear physical harm are afraid of certain kinds of work that might cause some particular harm or distress. Those who fear failure are, almost without exception, individuals who had tried various kinds of work for which they were unfitted, frequent failure had destroyed their ambition and they are now afraid that they will never succeed although they are not afraid of the work itself. Those who are afraid that they will lose caste if they work and those who won't work under orders belong to the I Won't Work branch of society, either weak-willed individuals who follow strong leaders of that cult or else persons possessing a morbid egotism which they call a spirit of independence. These are not cases of real ergophobia, although there are mental abnormalities in most cases. A dislike of certain kinds of work or even work generally is not an infrequent phenomenon among normal minded persons, but such persons do work because they have ambitions, have energy which must find expression and they realize a sense of obligation to society which must be paid in work. But we find many persons among the lodgers of the Municipal Lodging House who have no ambition, lack energy, do not recognize a sense of obligation to society, and have become apathetic so that they will not exert themselves further than to do those things necessary to keep themselves alive.

In this paper I have endeavored to bring out only one, perhaps the least frequent, of many defects which underlie the apparent laziness of the social outcasts who come to the Municipal Lodging House. Incidentally I have mentioned a few of the defects, unrecognized or unappreciated by this class and apparently not known to those who seek the cause and

(Concluded on page 300)

X-Ray Diagnosis of Pulmonary Tuberculosis

KENNON DUNHAM, M.D.
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The abnormal densities on an x-ray chest plate as produced by pulmonary tuberculosis vary widely in quality and distribution. This variation in quality and difference in distribution mark the progress of the disease and are our chief criterion in its recognition. From the start we must recognize two large divisions or types of infection, "the puerile" and "the adult."

The early puerile lesion, as seen upon an X-ray plate, consists of a small circumscribed area of density connected to the hilum by a heavy trunk. Such parenchymal foci are usually seen within the mid-lung zone. They may be distributed throughout all the lobes and only exceptionally are they confined to the apices. There is no especial susceptibility at the apices for the primary infection of tuberculosis. The hilum shadows are heavy, showing densities suggestive of calcification, caseation or fibrosis. Sometimes enlarged pulmonary or bronchial nodes may be seen.

The clinical significance of such findings on the X-ray plate of a child is a question of much import. We cannot decide from X-ray plate alone when these densities are of clinical significance. Thickened trunks and enlarged hilum shadows on an X-ray plate may be caused by various other childhood diseases, such as measles, whooping cough or mumps. They can never be considered as being the result of tuberculosis unless calcification or caseation are definitely shown to be present. Even then these markings cannot be interpreted as being evidence of active disease unless a definite parenchymal "fan" is visible. But there is one peculiar density seen in the hilum which has clinical significance. This we term a caseo-calcareous node. Upon the X-ray plate it has the density of calcium. It is usually quite large and can be seen to be made up of many small flakes of calcium rather than one stone. Upon microscopic section we find such lesions to consist of a soft caseous center containing calcium and larger hard flakes of calcium around the periphery. Such lesions we have never found to be healed on post mortem studies and they should always be considered as potential foci of infection.

Before a child is ten years of age he is usually sensitized and has acquired a degree of immunity. Infection after this age presents the picture of adult tuberculosis with apical localization. Such cases have a tendency to chronicity with fibrosis, cavity formation, and the absence of associated tuberculosis in the regional lymph nodes is noticeable. The tubercle bacillus has gained entrance to the lung by inhalation or circulation; it has been carried through the epithelium of the bronchus or the endothelium of the vessels, probably by the macrophages, and is gathered within the lymphoid tissue and lympathics. In an allergic soil it produces a marked inflammatory reaction with great exudation, which floods a number of lung compartments or primary lobules. The number of these so flooded depends of course upon the amount of exudate. This phenomena is the most striking difference between the adult and puerile types of tuberculosis.

Our X-ray observations show that the adult lesion starts with an exudate extending very close to the pleura. A full understanding of this phenomena is fundamental because it explains why we find physical signs early in adult tuberculosis and answers the question of why the X-ray plate lends itself so readily to the study of the pathological changes in this type of the disease. We do not attempt to answer why the exudation appears immediately under the pleura.

As before stated an exudate is the first reaction to the implantation of tubercle bacilli in the tissues of a sensitized individual. If a massive dose has gained entrance at any certain point the exudate is of the polymorphinuclear type, due undoubtedly to the reaction of tissue to any foreign protein. But this polymorphinuclear exudate disappears in about forty-eight hours, to be replaced by a monouclear exudate and proliferation of fixed tissue cells. From these elements the characteristic picture of tubercle formation with giant cells, epitheloid cells, and lymphocytes is produced.

From this point the pathological changes progress either to the reparative changes of fibrosis and calcification or the distructive changes of caseation, ulceration, and cavitation. When an adult is in possession of the ordinary amount of allergy and resistance any lesion of pulmonary tuberculosis always tends toward healing. It is also true that the lesions of an adult type of the disease are the results of repeated infections either from without or within. For instance the first lesion within the lung of an individual case, let us say, is in the right apex. This particular lesion has gone through the pathological changes of exudation, tubercle formation and is now present only as an old fibrotic scar. But while this oldest lesion has been progressing to repair and healing, a newer lesion has developed at some other point lower down in the lung or in the opposite apex. This newer lesion may be the result of spread from the original lesion or a new infection from without. This second lesion we will say is in the state of exudation. Drawing the picture still farther, we may have developed an area of caseous broncho-pneumonia in one of the lower lobes. This later lesion is the result of aspiration of infectious material from some apical lesion. Now in this problematical yet typical case there are three distinct lung lesions, all due to tuberculosis and each one in a different state of pathological change. There is present exudation, caseation and fibrosis.

We must turn again to anatomy to explain these lesions as we find them on physical examination, on the X-ray plate in post mortem studies. Septa are prolongations of the connective tissue from the pleura down into the lung. These connective tissue septa, rich in lymphatics, act as excellent barriers to the spread by continuity of any lung disease characterized by exudation. Inflammatory exudation starting within any one of the small compartments, anatomically known as "secondary lobules," is definitely limited by these barriers. Spread through such a septum will not take place until cavitation occurs. The localization and restriction of the pathological changes by these septa accounts for our localized rales on physical examination and also explains the "Fan" on an X-ray plate.

Let me state, however, that these fans may be present in any lung disease producing exudation. The cellular elements of an acute pneumonia, apical catarrh, or an infarct are all held in check by the septa and can consequently give localized signs and a "fan." The differentiation of these lesions can be made by an understand-

ing of the progressive pathology of tuberculosis just described and the ability to read it on an X-ray plate.

From extensive research it has been established that the densities caused by the pathological changes of pulmonary tuberculosis as shown on an X-ray plate vary in their quality and degree of density, progressing from the least dense to the heaviest as follows: 1. serous exudate, 2. cellular exudate, 3. fibrosis, 4. caseation, 5. calcification. Given then the problematic case cited above or any case of adult tuberculosis showing two or more lesions, the X-ray picture will be characterized by the densities of different qualities.

A thorough study of X-ray chest plates with this understanding will enable you to read the changes in terms of actual pathology. The localized cone shaped lesions walled in by the septa will never be seen in post mortem studies if the pathologist's usual sweeping cut from apex to base is made. But if you will carefully dissect out along the bronchi you will easily lay bare these lesions immediately under the pleura. So too if you read your X-ray chest plates with no respect to trunks you will never see the fan. If you will follow out the trunks from the hilum the lesions will not appear as one massive density on the X-ray plate but can be dissected in your mind into several distinctly separate lesions each one localized on a trunk and each one the result of a successive spread of the infection.

After the apical lesion, the most common lesion of adult pulmonary tuberculosis is caseous-broncho-pneumonia. It is invariably associated with old apical lesions, usually containing cavities. It invades the lower and middle lobes and lower part of the upper lobes and not infrequently the apex opposite to an old lesion. It is in all probability caused by aspiration of sputum droplets containing large numbers of the bacilli and so can be described as the reaction of massive infection in a highly allergic soil. Upon gross section of the lung and microscopic studies it is recognized as diffusely scattered yellow nodules of caeation, between which lie areas of normal lung tissue. Upon the X-ray plate it is easily recognized as a diffuse heavy mottling, frequently seen scattered along the main trunks suggesting "raisins upon a stem." It may become confluent and produce pseudo-lobar caseous pneumonia. As confluent areas it may take on a "fan" shape. Caseous broncho pneumonia may exist in a large area without causing any physical signs or symptoms. Its recognition in any case has always led us to a grave prognosis.

Recent studies however have made radical change in our views relative to the clinical gravity of this complication. The observations which have startled us and made us shift our views is the extent to which caseous broncho pneumonia can be absorbed. Too often has our grave prognosis, given because of the presence of caseous broncho pneumonia, been mocked by the clinical cure of the patient and evident absorption of the exudate.

Lobar or massive caseous pneumonia occurs in both the adult and child. In the adult type old apical lesions are always present. The old apical lesion may not produce sufficient symptoms to drive the patient to a physician or may be overlooked in a physical examination. Thus, although a definite tuberculous lesion may have existed for some time, it is too frequently only recognized when the massive lesion has progressed to cavitation and death is close, thence the name "hasty consumption." Allergy as shown by Krause, teaches us that "if a man falls acutely ill with tuberculosis it means that there has been rapid fresh extension or metastasis of infection from pre-existing foci, known or unknown." In X-ray studies the old focus is found and the progress of the new massive lesion followed.

Acute miliary tuberculosis deserves special consideration. We believe it is the result of lack or loss of immunity. Krause states "miliary tuberculosis is always the result of re-infection from older foci." Thus we find it associated with definite old healed lesions as revealed by the X-ray plates. In children the old focus may not be evident, but a Ghon is usually seen. Many cases of healed miliary tuberculosis are being found by our more general use of the X-ray chest studies. This diagnosis is only justified when the subject is well and has had no exposures to excessive dust or anthracite inhalation. The X-ray picture is that of fine sharp, discrete studdings more or less evenly distributed throughout all lobes. It has been our good fortune to have had two such cases come to autopsy and to be able to definitely prove the diagnosis. Most peculiarly these patients seldom if ever give history suggesting serious lung infection.

Opie in his pathological studies has noted the same and states, "such extensive calcified tubercles of the lung and its lymph nodes were disclosed, that a grave infection must have existed at some time previous; even though there had been no history of corresponding symptoms, there was doubtless at some period imminent danger of death from tuberculosis. This form of infection has an interest not only for the pathologist, as often assumed, but for the clinician and for those interested in the epidemiology of the disease." Such diffuse lesions located by the X-ray chest plate in an individual apparently well may have no greater clinical significance than that there is definite loss of lung function and shortness of breath may result. Furthermore it has been our observation that when a new tuberculous infection is superimposed upon these old healed miliary lesions, the progress of the case is rapid and the prognosis necessarily grave. This was taught to us by studies in the living by means of the X-ray plates, with full understanding of the knowledge given to us by the pathologist.

The predominance and significance of caseous pleurisy has been greatly emphasized by X-ray studies. The X-ray picture is that of empyema associated with caseous broncho-pneumonia without old apical lesions. At U. S. General Hospital No. 19 we had opportunity to study 17 cases by X-ray plates and careful post mortems. The pleura shows massive thickening with solid caseation, involving chiefly the parietal pleura. The lesions within the lungs are comparatively slight. Old apical lesions are seldom if ever present. In some cases the solid caseation of the pleura measured 5 c.m. in thickness. The course of disease in such case is invariably rapidly fatal, although the patient neither feels nor looks sick. Literature reveals meagre mention of the condition. Letulle gives a short concise microscopic description with some excellent illustrations. German investigators during the war reported a few cases among the Arabian troops in Turkey. To us caseous pleurisy represents the reaction to a massive infection in an individual devoid of resistance. It is comparable to the other massive lesions found in the lymph nodes, or as represented by massive lobar caseous pneumonia found in the aborigines and other primitive tribes. This has been emphasized by Bushnell. Of our 17 cases studied, 14 were found in young adult negroes coming from rural districts. The X-ray studies in each case showed the massive changes and absence of old apical lesions. The type of case and progress of the disease was followed in the living by the X-ray. Our deductions were proven upon autopsy.

Glycogen from Oysters and Insulin in the Treatment of Diabetes

FRÉDÉRIC S. MASON, M.D.,
New York

The treatment of diabetes, is based on the scientific determination of the carbohydrate tolerance of the diabetic individual controlled by frequent examination of the urine and blood with fasting, purgation and strict diet, on the lines laid down by Guelpa and so successfully carried on in this country by Allan and his followers.

Use of insulin as a means of relieving the graver cases and carrying patients over a difficult period until the more serious symptoms have subsided, must be recognized and in spite of the somewhat troublesome details which its administration involves, the discovery of and utilization of insulin undoubtedly is a distnct advance in the treatment of diabetes mellitus, since it restores, temporarily at least, the ability to burn sugar. Patients lives are prolonged, even those with advanced symptoms, and where they will take the necessary pains to learn the proper technique for injecting themselves, their condition may become such as to allow them to resume, in a measure, their ordinary alimentation.

Alleged new methods of treatment are not frequently, another way of expressing an idea already announced, but badly presented, by an author ill equipped with clinical, laboratory and biological data, or wanting in perseverance and authority in making known what he has proved to his own satisfaction.

An example of this kind was the discovery by Dr. Jacques de Nittis of Paris that what he believed to be pure glycogen does practically what is now being done for diabetics with insulin.

The neglect of the de Nittis findings with regard to the reduction of sugar in the urinary output (means of determining amounts of blood sugar were not perfected until 1912), may be attributed also to the possibility that the glycogen used was a similar if not identical product to insulin, which he separated with the glycogen of the oysters in the following manner: the fatty glands of oysters are boiled with distilled water, the liquid is filtered and after cooling, treated by Bruck's liquid and hydrochloric acid, in order to precipitate albumins. The filtered product contains the de Nittis "glycogen." The liquid is then treated with four volumes of alcohol at 95 degrees; this separates the glycogen which has a characteristic opalescence, is insoluble in alcoho, and ether and cannot be dialyzed. It is not reduced by Fehling's solution and is inverted by the saliva, diastase, pancreatic juice and the enzymes of the liver and blood.

May it not be that this glycogen when inverted by the blood enzyme becomes the equivalent of insulin and glucokinen and acts in a similar manner by consuming the excess of sugar in the blood of diabetics or that the insulin-like substance has not been separated from the "glycogen" extracted from the oysters?

The group of scientists at the Toronto University, who undertook the isolation, preparation, and investigation of insulin seem to have entirely ignored the work of de Nittis, Hirtz, Gilbert, Landrieux, Laumonier and Bouchard of Paris in 1904, who reported the results obtained by them in advanced cases of diabetes, with injections of this "glycogen."

J. J. Williams, Associate Professor of Biochemistry in the University of Minnesota, recently described before the American Chemical Society, what he called glycokinia, derived from plants, which has the properties of insulin, and while tests had not yet been made on human beings, Prof. Williams was able to report that it had been used successfully on diabetic dogs and rabbits. The insulin-like product has been found in lettuce, bean leaves, onions, and Dr. J. B. Collip, formerly one of the Toronto group and now of the University of Alberta, found it to be distributed in clams, yeast and mushrooms. Although the yeast product presented some difficulty in its preparation, he finally succeeded in producing a substance with similar properties to insulin.

A review of the work already done with de Nittis glycogen is interesting now that so much attention is being given to the insulin treatment.

De Nittis with other French physicians claimed to have obtained excellent results in diabetics by hypodermic injection with comparatively infinitismal amounts of what he believed to be glycogen obtained from young oysters. This was commenced almost 20 years in advance of the University of Toronto group of investigators with pancreatic extracts, but the question now arises is the so-called glycogen of oysters identical with insulin?

Like many timid but worthy pioneers, de Nittis contented himself with an announcement of his claims before several medical societies in France, and abstracts of these appeared in the French and American medical journals during 1905-6, but probably owing to the comparative obscurity, and demise soon after, of this young physician, the therapeutic value of this "glycogen" was forgotten. De Nittis, moreover, looked upon the effects of his glycogen from a somewhat different angle, insisting on its antiseptic and cardio stimulant properties as well as its remarkable action in lowering the sugar in the urine. He appears in fact, to have considered the chief role of his "glycogen" to be prevention of wastage in the economy and increase of resistance to infection by stimulation of phagocytosis, believing it to modify pathogenic changes inherent to senility. He found that cases of glycosuria and albuminuria improved under a milk diet and hypodermic injections of glycogen from oysters, but does not seem to have recognized the necessity of frequent injections in severe forms of diabetes, so that his studies gave us no clue as to whether he found the danger of over dosage as with insulin.

Evidently, de Nittis and his followers were influenced by the writings of Claude Bernard who insisted so much on the fact that glycogen present in the liver of animals and in low forms of plant life (mushrooms, yeast and so forth), was most abundant in young robust subjects, but reduced in aged, invalids and the cachetic. In his opinion, resistance to disease was in a definite ratio to the amount of glycogen stored up in the organism; phyagocystocic activity being dependent on this factor.

De Nittis also believed that glycogen was reposable for the rapid healing of wounds and acted as an antitoxin in poisoning from nicotine and atropin. He thought that glycogen ceased to be secreted by the liver when abnormal conditions of health prevailed, irrespective of the alimentary supply of material for conversion into glycogen, but does not appear to have made laboratory or biological tests to prove his contentions. His work, therefore, was incomplete, since it was supported only by clinical studies of cases of albuminuria, infectious diseases and diabetes treated with injections of "glycogen"

from oysters. Nevertheless, he was the first to show that with this, we had means of controlling the sugar in the urine, which it now appears to be a function of the pancreatic secretion insulin.

Professor Bouchard of Paris had similar notions to de Nittis for he speaks of the marked glycolytic and toxicolytic action of glycogen.

Laumonier also claimed that he obtained excellent results with glycogen in diabetes, but does not seem to have confined his studies to diabetics only. De Nittis evidently considered glycogen as a panacea for he speaks of having obtained excellent results in the treatment of purepural fever, acute catarrhal affections, laryngitis, tuberculosis, neurasthenia, Basedow's disease and so forth.

Hirtz, Gilbert, Landrieux and Laumonier, distinguished French authorities, recognized the claims of de Nittis with injections of his "glycogen" in diabetes and Mennier and Lebon were chiefly interested in its toxic action on cells, the reduction of temperature and its favorable influence on infectious diseases.

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REFERENCES

"Glycogen and Cell Nutrition", Ziegler's Beitrage zur Pathologischen Anatomie, Band xxxvii.
"The Role of Glycogen in the Economy", La Tribune Medicale, February, 1905.
"Glycogen" Mennier (Societe de Therapeutique, Paris, July, 1904).
Reports of cases treated with Glycogen, Dr. J. deNittis, Lariloisire Hosp., Paris (La Tribune Medicale, February, 1905).
Dr. Jacques de Nittis of Paris (Comptes Rendus Soc. Biologie, March, 1902).
"Glycogen in the Skin", American Journal of Dermatology, February, 1907.
Tessier, Societe de Biologie de Paris.
Dr. J. de Nittis, dans la Presse Medicale, 22 April, 1903.
Archives generales de Medecine, Mai, 1903.

Recent Investigations on Antiluetic Drugs*

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Constitution and physiologic action are the two important factors which determine the partition coefficient of a drug in its distribution in the tissues and in the body fluids. A third and very important factor deals with the physical structure of the drug in its solid phase, its solution phase, and finally in its combining action in the biological medium. In other words, drugs possess an organotropic and a parasitotropic action, and the ratio between these two factors determines an index which renders a decision as to whether or not the drug is safe for therapeutic use—a favorable proportion of organotropy and parasitotropy.

On this basis the Ehrlich chemoceptor and side chain theory still find application in the present use of drugs.

At this time it is only possible to discuss briefly the antiluetic drugs now available. To preface these remarks it should be stated that arsenic in some form should be synergized by means of mercury. At present, no single drug is at our disposal which will dispense with the other. Intramuscular injection of mercury finds preference in the hands of the largest dispensers of this drug. Physiologically it seems preferable to use the soluble form of mercury prepared in a suitable manner to eliminate pain to the greatest degree. The salicylate and the benzoate find application in the hands of those who prefer the insoluble salts of mercury.

At the present time bismuth is receiving considerable attention among foreign syphilologists and many very satisfactory reports have appeared, darkened by the usual bismuth forms of acute intoxication such as convulsions,dyspnea, and bradycardia; the chronic type showing diarrhoea, lassitude, albuminuria, and ulcerative stomatitis.

Bismuth preparations may probably find a place in antiluetic therapy, replacing mercury in some instances where the patient has shown a Wassermann fastness or possibly an intolerance to mercury .nedication. Bismuth has the advantage of possessing both acid and basic properties thereby adapting it to cases where there is need of an amphoteric condition.

There are three distinct types of bismuth compounds available. Bismuth quinine iodide, bismuth oxybenzoate, and the alkali salts of tartrobismuthate comprise the group now being utilized.

Bismuth is entirely too toxic for intravenous use, and finds application only in intramuscular therapy. Oily suspensions of the soluble and the insoluble tartrobismuthates have been used, but in most instances they have been accompanied by considerable pain.

Bismuth alone like mercury shows practically no trypanocidal activity in sublethal doses, as pointed out by Myers and Corbitt (1923).

In the field of arsenicals a much greater variety of research has been carried out. Ehrlich "606," Salvarsan, or, in official terms, arsphenamine, without doubt continues to be the most potent drug in the series with the exception of the silver salt. To this group has been added a variety of neoarsphenamines differing from the original in physical, chemical and therapeutic characteristics.

In 1913, Bertheim in his excellent monograph on arsenic compounds, pointed out the essential features in preparing the large series of arsenicals which had been accurately described in the scientific and patent literature found mainly in the *Berichte der deutschen Gesellschaft.*

There remain two types of arsphenamine available ranging from a hot water soluble product to one readily soluble in cold water. It should be distinctly pointed out that the method of preparation of the solution is not interchangeable and under no circumstances is it advisable to alkalinize the solutions while they are warm on account of the tendency toward increased toxicity. Lake of the Hygienic Laboratory has shown conclusively that the toxicity of arsphenamine is decreased by allowing the solution to stand 15-20 minutes after the alkali has been added to the solution. This feature finds clinical application in reducing the table reactions on account of the formation of a more ideal solution.

As to the arsenic content of the neoarsphenamines, theoretically the monosubstituted product should contain 32.1 per cent. arsenic, whereas the di-substituted product contains 26.4 per cent. arsenic. During the condensation of the dihydrochloride of dioxydiaminoarsenobenzene with sodium formaldehyde sulphoxylate considerable quantities of physiologi-

*Abstract of a paper read before the Scientific Section, American Pharmaceutical Association, Asheville, N. C., Sept. 3 to 8, 1923.

From the Research Division of the H. A. Metz Laboratories, Inc.

cally inert, inorganic salts are formed. When this solution is precipitated by means of alcohol, ether, or acetone, some of the physiologically inert, inorganic impurities are precipitated simultaneously with the neoarsphenamine. The presence of these products tends to lower the arsenic content without disturbing the pharmacodynamic arsenic which is present. It is quite absurd to indulge in some of the commercial subtleties employed to suggest a purification of the product or produce one of high arsenic content.

Attention was first called to the mono and di-substitution products of neoarsphenamine by Macallum (1920) who pointed out that the original Ehrlich "914" was a mono-substitution product.

Dale (1922) considering the problem toxicologically and clinically took up this matter for the British Medical Research Committee and stated that the composition of Neo-compounds of English origin differed so widely from various manufacturers that there was need of control and he describes the situation as follows:

Two Distinct Classes of Neosalvarsan Type.

"A short experience with the application of this test sufficed to indicate that the preparations of the neosalvarsan type submitted for test fell into two well-marked classes. On the one hand were those which resembled the German product more or less closely in appearance, in solubility, and in the rapidity with which their solutions underwent decomposition if left standing exposed to the air. On the other hand, there were others which had an advantage over the German product in their extremely free and rapid solubility, and which gave evidence of much greater stability in solution. Preparations of the former class had a border-line toxicity from the point of view of the test; many samples just passed it, and many others failed. A slight raising of the stardard would have excluded nearly all. Those of the latter class—the freely and immediately soluble type—passed the routine test with an almost unbroken regularity; when, experimentally, sample batches of this type were tested on higher doses, it was found that many were tolerated in a dose of 0.5 mg., some even in a dose of 0.6 mg. per Gm.; *i. e.*, the toxicity was often only one-half of that at which would still have passed the official control.

"No question of a control of therapeutic efficacy arose at this time. It would have been impossible, in any case, to carry it out with the staff available under war conditions. From the clinical side there was no hint of dissatisfaction; here again, in the hurry to get men through their treatment and return them to duty, no adequate control of results was possible. The practitioner appreciated the additional convenience afforded by rapid and perfect solubility, and the freedom from constitutional reactions, even when highly concentrated solutions were injected. The demand for the more soluble and less toxic type of product grew very rapidly, until manufacturers whose endeavor had been rather to copy German product found themselves forced to modify their process, so as to produce a more soluble type. Therewith the toxicity of their products fell likewise to the lower level. When, under peace-time conditions, it became possible to follow more thoroughly the effects of treatment, it was reported from several sources to the Salvarsan Committee (appointed meanwhile by the Medical Reseach Council) that the curative action of the 914 products in use, which by that time had almost entirely conformed to the more soluble and stable type, was under serious suspicion of being inadequate. An investigation was therefore undertaken by those charged by the Medical Research Council with the duty of testing these remedies. They were able to use, with slight modifications, the method, then recently recommended by American workers, of evaluating the therapeutic power on mice infected with a strain of trypanosomes. They found indications of a pronounced inferiority in therapeutic action of the 914 products of this country, as compared with the original German product, or with the former output of some British manufacturers. The facts were fully presented to the manufacturers concerned; the latter, with their experience, were then able to produce preparations which, while retaining some of the advantages of rapid solubility, showed as good therapeutic qualities as the German preparation. according to the experimental indication, and stil satisfied the official control as regards toxicity. There are the British products of the 914 type which are now being supplied.

The Need for Official Control of Products of the 914 Type.

"The result of this investigation made obvious the desirability of imposing, if possible, an official control of products of the 914 type for therapeutic potency, in addition to the existing one for absence of abnormal toxicity. The existence of the latter alone in the case of a substance of ill-defined composition, such as 914, tempted the manufacturer to secure a smooth passage for his product, by slight changes in the process, which gave it regularly a lower toxicity than that which the test allowed. It was clearly desirable to make certain that, in so doing, he was not weakening its therapeutic action. Before steps in this direction could be considered, however, it was necessary to ascertain whether the difference in efficacy of different samples in removing trypanosomes from the peripheral circulation in mice corresponded with a clearly recognizable difference in their efficacy in removing the spironemes from syphilitic lesions in the human patient. The following sections of this paper describe the details of the investigation, in which the same representative samples of the different types of product were compared both experimentally and clinically. It will be seen that, so far as the clinical observations permit conclusions as to relative therapeutic efficacy in syphilis, the results of the clinical trial are in full accord with the experimental estimates."

These laboratory tests were put in routine use in the Medical Research Council's Department of Biological Standards at Hampstead.

Following this report a second article appeared by Macallum (1922) comparing the American neoarsphenamines with those of French origin which consists entirely of doubly substituted arsphenamines.

According to Government regulation the arsenic content must be between 30 and 32 per cent. for arsphenamine, and 18 to 20 per cent. for neoarsphenamine. It has been suggested from official sources that the minimum arsenic content of all products is to be increased. Likewise the application of a therapeutic tests should be advocated by those who are desirous of giving the patient a truly active product. This is substantiated by the work of Dale, Macallum, the U. S. Public Health Service and by the therapeutic tests of our own laboratories. As pointed out above

these products are usually the disubstituted N-methylene sulphoxylate compounds or those oxidized to the next higher stage as illustrated by sulpharsphenamine.

Therapeutically sulpharsphenamine is less active than neoarsphenamine. Commercial products from the open market gave the following trypanocidal tests when examined according to the methods of the U. S. Public Health Service.

Drug	Dose mg. per Kg.	No. of organisms per cu. mm. before treatment	No. of organisms per cu. mm. 24 hrs. after treatment
	12	76,000	2000
	12	104,000	1500
	18	88,000	0
	18	82,000	0
Neoarsphenamine	27	68,000	0
	27	116,000	0
	40.5	74,000	0
	40.5	76,000	0
	60	72,000	0
	60	104,000	0
	12	82,000	8000
	18	102,000	250
	18	92,000	1500
	27	74,000	4000
	27	64,000	0
Sulpharsphenamine	40.5	60,000	0
	40.5	146,000	0
	60	106,000	0
	60	80,000	0
	12	108,000	256000
	18	96,000	6000
	18	106,000	10000
	27	118,000	4000
	27	60,000	0
Sulpharsphenamine 154	40.5	134,000	0
	40.5	92,000	0
	60	98,000	0
	60	106,000	0
	12	78,000	208,000
	18	98,000	14,000
	18	104,000	4000
Sulpharsphenamine N. U.	27	102,000	6000
	27	126,000	3000
	40.5	114,000	0
	40.5	88,000	0
	60	108,000	0
	60	94,000	0
	12	82,000	25,000
	18	80,000	14,000
	18	108,000	4000
	27	116,000	2000
	27	126,000	0
Sulpharsphenamine L-121	40.5	104,000	0
	40.5	86,000	0
	60	70,000	0
	60	120,000	0

From these figures it is observed that sulpharsphenamine is *two* and a *half* times less efficient than an average grade of neoarsphenamine but may be equally efficient therapeutically to a low grade neoarsphenamine of the disubstituted class. (Lake, 1923.)

Neutral neosalvarsan may be used equally as well for intramuscular injections. This type of therapy has been utilized for more than three years by several leading syphilologists in the treatment of congenital lues in babies without the appearance of a single necrotic aera on the buttock.

Silver arsphenamine has already taken its place among the antiluetic drugs that have proved their value in therapy. It finds its most valued application in cases where primary and secondary lesions are to be cleared up rapidly and also in that type of neurosyphilitics where a drug free from reactions is desired together with a high active arsenic penetrability into neural tissues.

It is *not* the *quantity* of arsenic which penetrates into the central nervous system but it is the *quality* (parasitotropic) and the *availability* at the site of the neural lesion which is to be considered the important factor.

Toxicologically it is rather diffiicult to produce any of the arsenical series that will not pass the present standards when men skilled in the handling of arsenic are engaged in the manufacturing process. The authors of this paper have been unable to find any arsphenamine or neoarsphenamine which is still in good condition that has ever been made either during the war or since the war that will not pass the present toxicity standards when normal, healthy, standardized rats are used. Myers and Corbitt elsewhere have shown that regulation of the inorganic salt content, principally the calcium, and amino acids are the chief factors in getting rats of this type. The composition of this diet is described in the *American Journal of Syphilis*, April, 1923. Rats fed on ground wheat and corn, calcium carbonate, sodium chloride, milk powder, and codliver oil show a normal growth curve and a uniform resistance to the toxic effects of the drugs.

In other words all our rats are standardized by growth curves and it has been ascertained by these methods that salvarsan will pass according to the Government methods at 200 mg. per Kg., neosalvarsan at 380-420 mg. per Kg., sulpharsphenamine at 600-800 mg. per Kg., and silversalvarsan at 180-200 mg. per Kg.

From a toxicological point of view products in hermetically sealed ampules need not be kept in ice boxes. Products which have been carefully prepared do not deteriorate at least during a period of three years. The data on these points are to be found in other publications by us and are too comprehensive to include in this article. Preservation of the ampuls on cool, dark shelves will suffice.

The physical condition of the blood stream of the animals is made more uniform by regulating its composition so that colloidclasia is avoided, as well as giving a uniform resistance to the tissues of the animal. Animals with pathologic conditions of the lungs and the liver occasionally may escape notice even under these circumstances. If at any time the death of an animal takes place immediately in the case of arsphenamine administration or in a few hours after the injection of the neoarsphenamine group, the animals in this group should be submitted to careful examination for liver or lung lesions which are magnified by means of arsenic intoxication.

As a result of these experiments, studies on man have been carried out by one of us (M.) and it has been shown that about 60 per cent. of the arsenic leaves the blood stream within the first five minutes. Unusual retention leads to such symptoms as jaundice, *dermatitis exfoliativa*, and gastro intestinal disturbances. Briefly speaking investigation of antiluetic drugs has largely been directed toward the patient and his tolerance. All of the arsenic drugs are safe enough but unfortunately unusual variations in the efficacy of these products has often made it difficult to hold patients to a proper course of procedure in therapeutic application. Experimental

(Concluded on page 300)

The Use of Serums and Vaccines in Preventive Medicine

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Prophylactic inoculation belongs to the field of personal prophylaxis as distinguished from sanitation, both being divisions of the field of preventive medicine.

I would like to define vaccination as the outgrowth of man's efforts to protect himself from pestilence by the imitation of nature's method of defense.

I suppose that ordinarily we think of these preventive inoculations as the outgrowth of brilliant ideas conceived by an intellect superior to that given the majority of us, but, as a matter of fact, these measures are only the outgrowth of the common experience of mankind; they represent part of the struggle of humanity with its environment, a part of the effort to improve the surroundings and conditions under which the race lives. Primitive man doubtless observed that one attack of a particular disease was all that usually fell to the lot of one individual, and that if the individual survived the first attack he was not likely to suffer from the same disease again.

I think we can best illustrate this by experience with smallpox; from observing that individuals became immune through an attack they began the habit of purposely inoculating people at a time which suited the convenience of the individual and which was doubtless regarded as propitious by the wise men rather than allowing the individual to take his chance with an attack in the ordinary manner. These inoculations with smallpox began in India and China at least three centuries before the Christian era. For almost two thousand years inoculation was used as a public health procedure prior to the appearance of smallpox in western Europe. When the scourge reached western Europe in addition to the practice of inoculation there developed a similar public health procedure known as "selling smallpox" whereby the individual was allowed to come in contact with some one suffering from smallpox and to acquire immunity thereby if he survived the attack.

The profiting of man by the experience of generations in this connection is well illustrated by the following quotation from a distinguished medical authority:

"Experience—not a single or ephemeral one, but one which had been many million times repeated, and for more than a thousand years—had taught that smallpox, like love, naturally attacks nearly all men, but that, with rare exceptions, each one has smallpox only once in his life and generally receives with the passing of the pestilence the inestimable gift of permanent immunity; and, further, that this fever is not proportioned to the severity of the attack but is equally distributed to the mildest and severest cases. Here was given an important index for a real prophylaxis—a desideratum which consisted in nothing less than the acquisition of variola itself under the most favorable possible conditions."

You may say that this refers only to inoculation with smallpox itself and that vaccination, as we understand it today, is the result of the investigations of the great Jenner. No one can have a higher appreciation of the work of Jenner, nor a greater respect for this wonderful man than has the writer, but we must recognize that long before the day of Jenner it was recognized that an attack of cowpox gave immunity to subsequent attacks, and, indeed, there are records of inoculations of persons recovered from cowpox, with smallpox, in order that their immunity might be submitted to a crucial test. As one writer puts it, Jenner did no more than "test the popular belief", but, as he (Jenner) says himself "I placed it on a rock where I knew it would be immovable before I invited the public to take a look at it."

Now, just what change has smallpox made for us? While the figures are uncertain, I believe it is conservative to say that prior to the days of vaccination at least one-third of all persons acquired the disease at some time and it is reasonably certain that it was the cause of something like one-tenth of all deaths; today, in most civilized countries, it is a rare disease, many physicians never having seen a case, and in communities where vaccination is consistently employed no deaths occur from smallpox.

Formerly smallpox was largely a disease of children and, indeed, one name for it was "children's pox". Thanks to infantile and school vaccination it is now largely a disease of adults, and yet, where vaccination has been neglected, as in the Philippines for many years, when smallpox attacks a community it reverts to its original incidence as a children's disease. Out of almost 1000 deaths due to smallpox in the Philippines due to smallpox nearly nine-tenths occurred in children under 10 years.

In the older days there were certain advantages associated with having recovered from smallpox; it is obvious that there was no further risk and that the individual was, humanly speaking, immune for the remainder of his days; it was somewhat easier to obtain employment and I want to quote here from two advertisements taken from English newspapers of a century and a half ago:

"Wanted: a man between twenty and thirty years of age, to be a footman and under butler in a great family; he must be of the Church of England and must have had the smallpox in the natural way.

"Wanted: a woman, middle-aged, to wait upon a young lady of great fashion and fortune; the woman must be of the Church of England and must have had smallpox in the natural way."

Furthermore, 16% of the advertisements for runaway servants and apprentices mentioned the individual as being sufficiently marked by smallpox to make this a sign useful in identification of the individual. It often had a social bearing, for, as one writer puts it, "in pre-vaccination days men declined to marry maidens who had not had smallpox"; evidently they were considered poor risks, and our friends the advocates of the eugenics movement might well adopt the requirement that successful vaccination of each of the prospective partners in any marriage should be a pre-requisite.

However, we do not need to go abroad for a sufficiently disastrous experience with smallpox; for example, in 1753 Boston, then a city of a few thousand population, was visited; apparently reliable figures show that one-third of the total population acquired the disease, one-third had already had it and were immune and that many of the remainder left

*An address delivered in the New National Museum, Jan. 28, 1923, to the Woman's Welfare Association, Washington, D. C.

on account of the severity of the epidemic. Apparently few of those who remained in the city escaped.

There are two ways of utilizing the beneficent effects of antismallpox vaccination and it is open to any community to choose which of these measures it will employ. Infantile vaccination and vaccination of school children may be consistently and intelligently pursued, and this will give the community an exceedingly low rate of smallpox.

The following figures obtain for well-vaccinated communities:

Cases per 10,000:

Maryland	1.0
New York	.24
District of Columbia	1.4

For poorly vaccinated communities the following figures obtain:

Oregon	14.8
Washington	17.2
Kansas	20.

Other communities apparently prefer to utilize vaccination in another way; they wait until the epidemic appears, then apply vaccination intensively and of course always succeed in suppressing the epidemic, not, however, until there has been a very large loss of life and a very much larger number of people marked with what has been called the "branding iron." Thus, about sixteen months ago an epidemic began in Kansas City, Kansas, in which there were 350 cases with 123 deaths; shortly after this, another epidemic began in Denver, Col., in which there have been 950 cases with 288 deaths. From one point of view, there is a considerable advantage in employing vaccination in this manner after an epidemic has started —the opposition to systematic vaccination melts like snow before an August sun—the various medical cults ordinarily arrayed against vaccination fall in line and each nobly does its bit in helping to suppress the pestilence.

Perhaps you have been impressed with the alleged failure of vaccination in the Philippines on account of newspaper reports of the disastrous outbreak of smallpox some four or five years ago; the truth is that vaccination had been neglected in the Philippines for a period of many years, and, as General Wood states "A huge unvaccinated population had accumulated in the Philippines and it required only a spark to set it into a conflagration;" he also tells us that after vaccination became more effective the disease was readily suppressed.

There are certain limitations to the efficiency of smallpox vaccination and I feel that they should be frankly acknowledged. The immunity conferred is perfect for a period of only two or three years; after that it gradually diminishes and after a period of ten or fifteen years much of the benefit has been lost, although it may be expected to reduce very materially the severity of an attack. The operation of vaccination, while trivial, is associated with a slight degree of pain and a successful vaccination is often quite painful and gives rise to distinctly unpleasant symptoms. Furthermore, occasionally even after a carefully performed vaccination with proper material, some unfortunate complication ensues and a fatality results; this is exceedingly rare, however, but one death being charged to vaccination among four million soldiers vaccinated and in this case influenza and pneumonia were set down as complicating conditions.

Perhaps the next in importance comes preventive inoculation against *diphtheria;* two procedures are now used here:

1. Among exposed children it is customary to give small doses of antitoxin which leads to a very satisfactory immunity but for a comparatively short period, a matter of weeks rather than of months. This method, however, is distinctly useful where children have been definitely exposed to the infection.

2. The second procedure available in the case of diphtheria is on a very different footing, and illustrates again what has been said under the head of smallpox with respect to preventive inoculation being the outgrowth of the experience of the community. It was observed that certain persons did not acquire diphtheria even when exposed to it under conditions which might have been expected to bring about infection. It was learned that these persons had circulating in their blood sufficient antitoxin to protect them quite securely. It was but a step from this to the inoculation into the individual of small amounts of antitoxin combined with a small amount of the diphtheria poison and this was shown to give, after a period of some months, a very satisfactory and long-continued immunity. This is not a measure to be used in an emergency but it is applicable to all children under ten years of age, and, for practical purposes, renders a child almost insusceptible to diphtheria. It is worth stating that where this life-saving measure has been offered to parents of school children in New York City approximately half have accepted and asked that their children be immunized against diphtheria. There is a disadvantage in connection with this as several inoculations are usually required.

Finally, under certain conditions, vaccination against *typhoid fever* may be extremely useful; it is not to be recommended as a general measure in communities provided with good water supplies and good sanitary arrangements in general, but, under military conditions, camping trips, among tourists, etc. It is a very serviceable procedure. The figures on military experience with antityphoid vaccination have been so extensively quoted that I will not repeat them here but will only say that among four million vaccinations no deaths were recorded, and that in an Army such as we had during the late war but a little over 1500 cases occurred; while in pre-typhoid vaccination days a similar group of men would have given rise to hundreds of thousands of cases.

There occurred a few years ago in a small community in Ohio an epidemic of typhoid fever which serves as an excellent demonstration of the value of typhoid vaccination. In Salem, Ohio, among a population of 10,305 there occurred 882 cases of typhoid fever; when the health officers analyzed the figures they were struck by the exceedingly small number of cases among men between the ages of 20 and 30. Investigation showed, as might have been expected, that men between these ages had for the most part been immunized against typhoid fever while in the Army and so successful had the immunization been that among 210 former service men but three cases of the disease occurred, a proportion of 1 to 70, while among women of the same age group 1 in 8 developed the disease.

The disadvantage of typhoid vaccination is the fact that it is relatively ineffective after two or three years; in some of the European armies it was the custom to vaccinate annually in order to retain a high degree of immunity.

I conclude by saying that vaccination against influenza, pneumonia and whooping cough are in the experimental stage, not yet being regarded as working public health procedures, while, with respect to tuberculosis, scarlet fever and measles we have no agent of value.

Antiquities in Medicine

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In spite of the rapid progress medicine has made in recent years, many clinical and therapeutic absurdities still remain, as a reminder to tradition and superstition.

Cupping

In the healing art advantage is taken of every therapeutic means. To cure or alleviate the ills of mankind pharmacotherapy is most frequently used, and when prescribed in the right case and in the right way will always do much good.

In addition to drug therapy, mechanical, thermal, chemical, electrical, psychic and hydrotherapy are occasionally used with good results. The improper or indiscriminate use of any of them does harm to the patient and to the value of the remedy itself. One of the most popular mechanical therapeutic agents is dry cupping. This is a remedy of great antiquity and it is used by many people in many lands. It belongs to that group of therapeutic substances known as counterirritants. They are used on the assumption that, when applied to the surface of the body, they will, by their own irritating action, relieve irritation of the underlying deeper structures or organs.

The entire theory on which the physiological action of counterirritation is based is indefinite and uncertain. In the earlier days of medicine, when humoral pathology dominated medical thought, counterirritants were supposed to draw the diseased humors from the deeper organs to the surface of the body. With the advance of medical knowledge the therapeutics of counterirritation and cupping were based on the theory that irritation or suction of the skin produced a local hyperemia, bringing more blood to the surface and thereby relieving congestion of diseased internal organs. It was also thought that surface irritation caused reflex action resulting in favorable circulatory or trophic changes in the underlying organs. The work of Head and Mackenzie on surface localization in visceral diseases has thrown much light on the subject of counterirritation. According to these observers, every diseased internal organ, through its nerve supply causes an area of hypersensitiveness in a certain segment of the spinal cord. Within this hypersensitive spinal area there are nerves which project to the periphery to supply definite areas or zones of muscle and skin. Through the proximity of these sensory, visceral and skeletal nerves in the spinal cord, disease or irritation of an internal organ causes an area of pain, tenderness or hypersensitiveness in a corresponding definite area or zone on the surface of the body. It is therefore evident that since visceral irritation affects a definite area on the skin, a counterirritant applied to that surface area will affect the corresponding internal organ.

The humoral theory is mentioned here for historical reasons only. To assume that the therapeutic value of cupping is due to the removal of blood from the internal organs to the surface of the body is erroneous. The entire quantity of blood held in the hyperemic circular spots produced by the cups on any area of the body is insignificant when compared with the quantity of blood which is circulating within the body. To produce sufficient peripheral vasodilatation as to bring more blood to the surface and less to the internal organs, quite other therapeutic means are necessary. A warm bath or a mustard bath will cause dilatation of the surface blood vessels and will do more good than any amount of cupping. It is doubtful whether the application of cups, like so many dots, all over the chest will produce reflexly changes in the lungs. To cause reflex action in the lungs nothing will serve the purpose better than the proper application of cold water. A mustard paste, applied all over the chest, especially when the mustard is mixed with warm ground flaxseed, will produce peripheral vasodilatation,and reflexly affect the internal organs.

Whatever the theory on which this popular remedy of cupping is based, its true value as a therapeutic agent can only be determined by a practical clinical investigation. During the recent influenza epidemics, when it was hard to find a living human being whose chest had not been cupped either as a prevention or as a cure for influenza or pneumonia, I investigated the therapeutic worth of this old traditional remedy. I have asked quite a number of patients how they felt after being cupped, the cupping usually having been done either on the advice of the family physician or because of their own faith in this inherited household remedy. The majority of patients thought that they were not at all benefited by the cupping. Some said that they felt somewhat better for a while after being cupped but soon felt no change for the better. A few stated that they felt much better after the cupping process and were sure it had saved them from a serious illness. In the cases where the cupping was said to have done much good, it was difficult to tell how much of the benefit was due to the actual cupping and how much to the hypnotic suggestion produced by so old and respected a household remedy. The patients, however, all complained that the cupping had made them weak and that the skin felt sore and painful.

In addition to their own statements as to their subjective feelings after being cupped, the effect of cupping on the physical signs, the pathological symptoms, and the temperature curve were studied in a number of cases. Observations were also made on the possible influence of cupping on the course, and termination of various respiratory diseases.

From this clinical investigation on the therapeutic effects of cupping it may be definitely stated that it does not prevent or cure influenza or pneumonia or any other disease of the lungs for which it is most commonly used. Cupping may do some good in edema or congestion of the bases of the lungs, in renal congestion, in subacute pleuritis, in lumbago or other muscle aches, in neuritis and neuralgia. Cupping does actual harm to infants, young children, asthenic adults, and the aged. It makes them weak, and their skin sore, painful, and black and blue. The entire process of cupping, with its imposing paraphernalia, is so terrifying to young children that it should never be used in any disease of childhood.

Whatever possible good there may be in the counterirritation of cupping has been grossly abused. It is being advised in almost every real or imaginary disease of the chest without any diagnostic thought or therapeutic reason. It has become the exclusive trade of barbers, discarded nurses, and crafty old women. When cupping is used in the right case with proper care and discretion it may be of some assistance in the care of the sick. But its careless, thoughtless, and offhand use for any disease or no disease has done much harm to many patients and

brought down this popular remedy to the ranks of a quack medicine and a therapeutic humbug. Whether there is any therapeutic value in cupping or not, it is a baseless traditional remedy and it may be discarded without loss to modern therapeutics, as I have also stated in the *New York Medical Journal,* October 16, 1920.

Fats, Oils, Ointments and Liniments as Counterirritants

Fate has evidently decreed that the chest should not only bear the insults of cupping, but it should also be smeared and rubbed with all kinds of fats, oils, and liniments, or be plastered with some paste. Lard and other bland fats are frequently rubbed into the chest to prevent or cure a cold. While it may not do any harm, it makes the chest feel greasy, dirty and uncomfortable. A flannel shirt to the chest will do more good.

Camphor oil, turpentine and various ointments of menthol, mustard oil or wintergreen oil are commonly used to anoint the chest in bronchitis and other bronchopulmonary diseases. They are used for their counterirritant effect as they contain volatile, irritating substances. Whatever value there may be in their counterirritant action is more than balanced by their pungent smell and irritating effect on the respiratory system. All volatile counterirritants are also direct irritants to the bronchial tract. A layer of absorbent cotton properly applied around the chest and changed frequently will keep the chest clean and warm, and will act as a pleasant, mild counterirritant. Greasy volatile irritants are the cause of many a persistent cough.

No doubt it will be considered a sacrilege to question the value of so old and venerable a remedy as cupping or the use of the various pastes, fats, and counterirritant oils in diseases of the chest, the sooner, however, they are consigned to the realms of discarded and forgotten remedies, the better. What a pity it is to see a patient, especially a child, who had his chest cupped until the skin is black and blue, or is covered with some greasy irritating oil or fat, and bathed in an ill-smelling, pungent atmosphere of camphor, turpentine, menthol, mustard oil or wintergreen oil.

Dirt, Filth, and Darkness in Measles

Measles is a general eruptive disease affecting the body internally as well as externally. The skin is hot and sore, the conjunctivae congested and the respiratory tract frequently inflamed. Through a combination of tradition and superstition, a patient with measles is carefully guarded against fresh air, light, and cleanliness. Not only are the windows kept hermetically closed but they are also darkened by hangings of old clothes, specially of a dark-red color, to match the color of the measles. Not a drop of water is allowed to come in contact with the skin. It is quite common to see children with measles snugly wrapped in bed clothes and kept in superheated closed, dark rooms, the eyes and nose profusely discharging and the body red, swollen, dirty and bathed in perspiration.

There is no need for making the room totally dark. The conjunctivitis and the photophobia can be relieved by placing the child so that the sun will not strike the eyes. When necessary, the ordinary window shades partly drawn down is sufficient to exclude strong light from the room. The eyes and nose should be washed with a solution of boric acid. There is nothing that will prevent or cure broncho-pneumonia in measles as plenty of fresh-warm air without drafts. Proper ventilation can be obtained by changing the rooms, or through an open window in an adjacent room, or the weather permitting, by keeping the window partly open in the sick-room. When possible the body should be kept clean by using warm water and soap. But to meet the deep rooted objection to the use of water in measles at least the face and the extremities should be washed.

Teething as a Diagnosis for Many Ills

Teething is a transitional period between infancy and childhood preparing the infant for the change from a milk diet to one of semi-solid and solid food. It is a normal physiologic process in the life and development of the infant and usually gives rise to no pain or ill health. Occasionally, however, dentition causes certain disturbances in the health of the infant, but its etiologic and pathologic importance have been grossly exaggerated and almost every disease of infancy and childhood has been diagnosed as teething much to the injury of many little patients.

In the course of examination of a large number of infants and young children I saw cases of gingivitis, stomatitis, tonsillitis, retro-pharyngeal abscess, otitis media, gastrointestinal diseases and convulsions diagnosed as teething. It is wrong to make a diagnosis of teething because the infant or young child happens to be fretful and irritable and has red and swollen gums with dribbling of saliva from the mouth or because he has a diarrhea, or a convulsion or an obscure fever. While dentition may cause redness and swelling of the gums, in many cases the swollen gums, like many other diseases of infancy and childhood, have no relation to dentition. A careful history and physical examination of every sick infant and young child will always lead to a proper diagnosis and the teeth will not be blamed for so many ills.

Very early in the embryologic development of the fetus the teeth are formed from two germ layers, the ectoderm and the mesoderm, the former giving rise to the enamel and the latter to the rest of the teeth. They undergo various changes and transformations till at birth there are ready formed the tooth-germs of the temporary or milk teeth. As the tooth-germs undergo ossification and increase in size they approach nearer and nearer the surface of the gums aided to some extent by the absorption or atrophy of the upper layers of the ridge of the gums, and when the infant is about six months old they gradually break through in a certain definite order. In rare instances the infant is born with one or more teeth already cut through, a condition called dentitio precox, which probably has no significance beyond that they must be extracted in order to enable the mother to nurse the infant. In some cases dentition is much delayed, called dentitio tarda, this must not always be considered as a sign of ill health, though in the majority of cases it is due to improper feeding, rickets, or cretinism.

It would be strange that the teeth which follow the normal embryologic events and develop like the rest of the human body should cause disturbances in the health of the infant during the period of dentition which is probably a continuation of a process of growth and formation begun in intrauterine life. It is, therefore, reasonable to assume that in the majority of cases of so-called difficult dentition there is an underlying local or constitutional disease which causes the normal physiologic function of dentition to become a pathologic process.

The treatment of difficult dentition is that of the underlying disease. Mouth infection should be treated with a mild alkaline antiseptic solution. Rickets, which is a common cause of disturbed dentition, as well as malnutrition and gastro-intestinal disturbances, require proper feeding. Convulsions during dentition may be the result of various diseases or it may be tetany which is usually associated with rickets. Teething rings, pieces of arrowroot and other articles which mothers give to their infants to bite on in the belief that they cause easy teeth-

ing are responsible for many mouth infections. As soon as the teeth have cut through the gums, they must receive proper care. Once or twice a day they should be cleaned with a soft cloth wet with warm water or a warm mild alkaline solution, later a soft tooth brush may be used. It is very important to the health and nutrition of every child that the temporary teeth should be maintained in as perfect a condition as possible and not allowed to decay. Caries of the teeth may cause periostitis, alveolar abscess, oral sepsis and through the absorption of toxins elaborated around decayed teeth, anemia, endocarditis, myocarditis, arthritis and other constitutional diseases. The temporary as well as the permanent teeth should be periodically examined and treated by a dentist.

Rheumatism as a Diagnosis for all Aches and Pains

In the entire domain of medicine no diagnosis is so frequently erroneously made as that of rheumatism. Every joint disease and every dull ache and pain are commonly called rheumatism. The diagnosis and the treatment of rheumatism are as antiquated as the disease is ancient. It is well to bear in mind that rheumatism is very rare in infancy and uncommon in advanced age. Joint disease in early life may be infectious arthritis, gonorrheal arthritis, tuberculosis, osteomyelitis, syphilitic epiphysitis, scurvy or Still's disease. After middle age, joint affections may be the result of a variety of pathological conditions, ranging from sub-deltoid bursitis to flat feet. Acute rheumatism is distinctly a disease of childhood and adult life. It may manifest itself as carditis, arthritis, respiratory diseases, muscular pain, nervous irritability, and cutaneous eruptions.

In the treatment of rheumatism there is no need for the ill-smelling, irritating oils, liniments, and ointments so frequently used as local applications. Rest in bed, warmth, and the salicylates and alkalies will do good in the majority of cases. To obtain lasting results, salicylates should be given in small doses for many months after the acute symptoms have subsided.

Whatever disease one may be called upon to treat, he will be worthy of his hire, if only he keeps his patient clean and comfortable. Cupping, disagreeable irritating, nasty medications; bad smelling, pungent, counterirritants; dirt and darkness; in the treatment of human ills, are a legacy from the middle ages.

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Treatment of Constipation in Early Childhood

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While intestinal stasis is by no means as frequent a disturbance in childhood as the diarrheal conditions, yet it is sufficiently common, especially in bottle fed infants, to deserve of a special consideration. Since in most instances the sluggishness of the bowels is directly due to dietetic errors or to the factors concerned with the feeding, it behooves us to approach the treatment from that angle.

Constipation is relatively less common in older children, because they are allowed a more liberal and mixed diet. From this we can deduce the fact that a low total solid content in the food, is one of the outstanding causes of constipation. This being the case, and since infants and children can digest and tolerate various articles of food at an early age, (1) it follows that in the prophylaxis and especially in the treatment of constipation, a more liberal and mixed schedule of feeding is indicated early in the child's life. Particularly valuable are the fruit juices and cooked vegetables, the former commenced at the age of one month and the latter at five months. Other articles of food are gradually added to the child's diet, so that by the end of the first year it gets a fairly mixed and generous diet.

Of almost equal importance in the causation of intestinal stasis is a low fat content, especially in artificial feeding. Fats in the child's diet are important. The unabsorbed fat in the intestinal canal is of value in preserving the consistency of the faecal mass, forming as it does about 30 per cent of the dry substance of the stools. And, besides increasing the volume of the stools, it also keeps them soft in consistency. The percentage of fat in the formula can be advantageously increased, by the addition of boiled water, up to 3 per cent in the young infant and to 5 per cent in the older child. Practically the addition of from one to two grams of boiled butter to each feeding, as early as at the age of one month, will approximate the desired fat content. Substituting cream for part of the milk will also increase the fat percentage. The raising of the fat content by the addition of boiled water is, however, preferable, because butter is much better tolerated than cream, due to the reduction of the acidity of the butter in the process of boiling. (2).

The giving of fat in the form of olive oil is often desirable. It may be given in ten drop doses in the young and in teaspoonful doses in the older child, from one to three times daily.

A third important cause of constipation is a deficiency in carbohydrates. To stimulate more active peristalsis, a high sugar content is indicated. This is best accomplished by the addition of dextri-maltose up to 7 per cent. This sugar is preferable to lactose because it is more laxative in its effect.

Minor fallacies in the construction of the formula are often responsible for the sluggishness of the bowel movement. Barley water, because of its costiveness, or plain water, if used as a diluent, is to be omitted, and in its stead oatmeal water substituted. Again, if lime water is being used to reduce the acidity of the cow's milk, it is also to be omitted; and either bicarbonate of soda or milk of magnesia substituted, preferably the latter, since it is slightly laxative. In the early months a half teaspoonful of the magnesia, gradually increased to one teaspoonful, is added to the day's food.

In conclusion it is necessary to emphasize the importance and influence of regularity in nursing and in the feeding in general, and of early training on the regularity of bowel evacuation. Much of the constipation of infancy and early childhood can be avoided by strict attention to these minor but essential habits.

Conclusions

1. A more liberal and mixed schedule of feeding early in the child's life is of prime importance in the prophylaxis and treatment of constipation.
2. A high fat or carbohydrate content, as the case may be, will lessen the tendency to intestinal stasis and often correct its presence in bottle feeding.
3. Regularity in the feeding and early training are potent contributary factors in the prevention and treatment of the disorder.

815 Park Avenue.

Genito-Urinary Diseases

Standards of Infectivity Pertaining to Venereal Diseases

The following standard shall govern in determining the infectivity of persons suspected of being infected with gonorrhea, syphilis and chancroid, and the application of them to the laws, rules and regulations of the State of Illinois.

Explanation of Terms and Tests

1. Wherever in these standards the terms "clinical history" and "clinical symptoms" and "clinical signs" appear they mean that the case presents a history of exposure and incubation period and signs and symptoms which are recognized as typical by standard text books on venereal diseases, and that the history, signs and symptoms in the given case are interpreted as typical by the local health officer or by some experienced physician designated by him to diagnose the condition.

2. In all references to laboratory tests and laboratory procedures in these standards where the standards do not specify definite procedures, the reference is to standard practice in the taking of specimens, the parts from which they are taken, and in the preparation and examination of specimens as set forth in standard text books of laboratory procedure.

3. Whenever the statement appears "definitely proven that the individual has infected someone," it is meant that evidence on the point is convincing to the local health officer or to someone designated by him as his representative to establish the fact.

Acute Gonorrhea

1. If it be definitely proven that the suspect has infected someone within four weeks, no further evidence of infectivity is required.

2. A typical clinical history with typical symptoms and signs of acute gonorrhea is sufficient to establish diagnosis of infective gonorrhea.

3. If the clinical findings and history leave the diagnosis of infective gonorrhea in doubt, then the positive results of any one of the following laboratory tests must support the clinical findings to establish such diagnosis.

(a) Typical culture of gonococcus.
(b) Gram negative intracellular diplococci typical of gonococcus in form and arrangement.

Chronic or Latent Gonorrhea

1. To establish a diagnosis of infectivity it is necessary that at least two laboratory tests support the history and clinical evidence of the disease.

2. If it be definitely proven that the suspect has infected someone within four weeks, no further evidence of infectivity is required.

3. If the history and clinical signs and symptoms leave the diagnosis in doubt, to establish a diagnosis of infective gonorrhea there must be in support of the clinical evidence of infectivity, positive evidence of the presence of gonococci as shown by two of the three laboratory tests, two of which appear above as (a) and (b), in B. 3, and a third test (c) which is the complement fixation test.

4. If the history and clinical symptoms and signs are not supportive of a diagnosis of gonorrhea there must be positive results from at least three of four laboratory tests, three of which are designated above, (see B. 3 and C. 3) and a 4th test, the following.

(d) The presence of intracellular diplococci typical of gonococcus in form and arrangement, and stating with methylene blue.

in order to establish a diagnosis of infective gonorrhea.

Gonococcus Carriers

This term is used as meaning those who are infective but give no history nor show any signs or symptoms of gonorrhea.

1. To establish infectivity the presence of gonococci must be proven by at least three of the four laboratory procedures designated as (a), (b), (c), and (d). If, however, there is definite proof that the suspect has infected anyone, the standard C. 2 shall apply if it is supported by a pasitive result in one of the four laboratory tests mentioned above (See B. 3 and C. 3 and 4).

Termination of Infectivity

1. In all cases of infective gonorrhea before such case may be pronounced non-infective, the signs and symptoms must show that the condition has been arrested; such observations must be supported by six successive negative laboratory reults from one of the tests designated above; these tests to be made at intervals of at least twenty-four hours and when possible in the case of females at least one smear should be taken on the last day of menstruation or within twenty-four hours thereafter. No smear for purposes of a test shall be taken within twelve hours after the use of a douche or after the topical application of a bactericidal agent.

2. When the term positive or supporting is used in connection with gram stained specimens, reference is made to the presence of gram negative diplococci.

Acute Active or Early Syphilis

1. When it has been definitely proven that the suspect has infected someone within one month, diagnosis of infective syphilis may be made on that evidence alone.

2. When the history, clinical signs and symptoms are typical of acute or early syphilis, the diagnosis of infective syphilis does not requir the supportive evidence of laboratory tests.

3. Cases in which the history and clinical symptoms and signs leave the diagnosis of acute infective syphilis in doubt, a positive finding of Treponema pallidum by dark-field examination or in stain specimens, is sufficient to establish the diagnosis. In the case of tonsillar lesions due care must be exercised in differentating treponema from other spiral organisms.

Subacute or Chronic Syphilis

1. If it be definitely proven that a suspect has infected a person with syphilis within one month, no further evidence of infectivity shall be required.

2. If the history and clinical signs and symptoms are conclusive of syphilis in an infective stage, no further evidence of infectivity shall be required.

3. If there be no convincing proof that the suspect has infected anyone within a month, and if the history, signs and symptoms leave the diagnosis in doubt, a positive finding of Treponema pallidum is sufficient to establish the diagnosis; likewise, a positive Wassermann, providing there is any break in the continuity of the membrane lining or covering the external genitalia, cervix, uteri, the vagina, urethra, glans penis, mouth, rectum, or eyes or the skin in the vicinity of the mouth, rectum or genitalia.

4. Chronic syphilis with gummata, giving a positive Wassermann is infective when a lesion or lesions are located in the testicles or other generative organs of the male, or in the generative organs of the female, or in the skin near the genitalia, or mouth or rectum, and in locations where due to heat, moisture or rubbing, breaking down and external discharge is probable.

Syphilis Carriers

1. Syphilis carriers in whom evidence of the disease is a positive Wassermann test, are not infective unless there are breaks in the continuity of the skin or mucous membranes or discharge in which Treponema pallidum is found.

Rules F. G, H, do not apply when the question is one of the mother infecting the unborn child; a mother not infective to her mate may be infective to her child; pregnant women who are strongly poistive to the Wassermann test are often infective toward their unborn children.

Termination of Infectivity

1. When a case has been declared to be infective it is to be so regarded and controlled until at least five clinical examinations made on different days have shown—

(a) Absence of ulcers or other discharging lesions or breaks in the continuity of mucous membranes or skin surfaces.
(b) Absence of other signs and symptoms of infective syphilis.
(c) If there be ulcers the case may be declared to be non-infective if the ulcers or discharging lesions do not appear clinically to be syphilitic and if at least five examinations for Treponema pallidum have been negative. The examinations for treponema shall not be taken within twleve hours of the local use of any spirocheticidal agent, or within twenty-four hours after the use of mercury or arsenic, and must be made on five different days.

Chancroid

1. If there be definite proof that the suspect has infected anyone within two weeks, no further evidence of infectivity is required.

2. Typical history, symptoms and signs of chancroid or chancroidal bubo is sufficient evidence for the diagnosis of infective chancroid.

3. When the clinical symptoms leave the diagnosis in doubt, the presence of the Ducray bacillus is sufficient proof for a diagnosis of infective chancroid. In all cases of suspected chancroid all the lesions must be examined for Treponema pallidum in the beginning of treatment and not less often than once a week thereafter; if these be found, the evidence will be regarded as sufficient for a diagnosis of syphilis either as the original disease or as a complicating disease.

4. In every case of suspected chancroid Wassermann tests should be made weekly for eight weeks to determine the possibility of syphilis. A positive Wassermann in a person with supposed chancroid who, prior to having the lesion, was negative to the Wassermann test shall be considered proof of infective syphilis.

Termination of Infectivity

1. A condition having been declared infective chancroid shall not be declared non-infective until all ulcers and discharging bubos have healed.

The foregoing standards of infectivity were promulgated, adopted, and declared effective and in force March 1, 1923 by the Illinois Department of Public Health. The object is to provide uniformity of requirements throughout Illinois and to guide the courts and other when interpreting and inforcing the state rules and regulations for the control of venereal diseases. —(*Illinois Health News*, Sept., 1923.)

Cerebrospinal Fluid in General Paralysis

Gennerich considers the diffusion of cerebrospinal fluid into the parenchyna of the central nervous system as the most important factor conditioning metasphilis. He believes that the pia mater normally protects the central nervous system against diffusion. If the membrane is injured by a chronic latent syphilitic meningitis, the fluid penetrates into the brain or spinal cord, and causes general paralysis or tabes. He infused in cadavers a solution of potassium forrocyanid intorspinally, and was able to prove in general paralysis and tabes a penetration of the substance into the nervous tissue by treating section with copper sulphate. He believes that these experiments prove this theory.—(*Mun. Med. Woch.*, April 27, 1923, 70, 524.)

Syphilitic Fever

Lanzenberg who records two illustrative cases, states that fever may be the only indication of active syphilis in the secondary or tertiary stage, without being accompanied by any lesions of the skin, mucous membranes, or viscera. The temperature curve may ask me various forms, being continuous, remittent, intermittent, or irregular. Lanbenberg is inclined to attribute the fever in such cases to disturbances of the endocrine glands. In every case, therefore, of fever in which the cause has not been discovered an examination for syphilis should be made.

In Lanzenberg's first case, which occurred in a man aged 37, the temperature chart closely resembled that of typhoid fever, and pharyngeal ulceration and periostitis of the first metatarsal were attributed to this cause, until a history of syphilic infection two years previously was obtained, when recovery took place under treatment by injections of mercury cyanide, followed by novarsenozenzol.

The second case, which occurred in a woman aged 28, was characterized by an evening pyrexia suggestiye of pulmonary tuberculosis, especially as the patient had recently a severe attack of influenza complicated by bronchopneumonia. As no improvement took place under treatment by rest and in a sea climate, the Wassermann reaction was examined and proved positive. Treatment by injections of novarsenobenzol was then instituted, and rapid recovery took place.—(*Paris Med.*, June 9, 1923, 518.)

Accidental Syphilis in Medical Men

C. L. P. Trub, of the University Dermatological Hospital in Bonn, has published a monograph on syphilis as an occupational disease in medical men. This work is frankly a compilation and the editorial comment with which it is flavored is of such a neutral and non-committal character that the book is little more than an expanded bibliography. But as such it is very useful and it is likely to prove a valuable work of reference; the more so because of the orderly arrangement and classification of the subjects under discussion. Accidental, extragenital syphilis in medical men is quite common, and Jonathan Hutchinson alone is said to have seen more than 100 such cases.

Dr. Trub has collected 669 cases from literature, and it is obvious that this number must represent a mere fraction of the total; syphilis is not a disease which courts publicity. The statistics concerned with the site of the primary lesion show that the fingers, hands, and arms, are the parts most frequently infected, and Dr. Trub has assembled as many as 338 cases in which the chancre was situated in these positions. In another 32 cases the eyes, and in 12 the lips, were the first structures to be infected, and only in two cases was the chancre situated in a tonsil.

It is curious to note how frequently medical men and students have deliberately contracted experimental syphilis. It is, perhaps, misleading to use the term "deliberate" in connection with medical students whose knowledge of the risks they ran must have been far too incomplete to form a basis for deliberation. The medical man who encourages the callow medical student to play the part of the experimental animal in this connection shows a courage which is as reprehensible as it is vicarious.

A separate chapter is devoted by Dr. Trub to the problem of post-mortem infection. About 30 cases of such infection have been recorded, but only about four of them stand criticism, and even these four cases the evidence is not as complete as it might be. Incidentally this monograph shows very clearly how nebulous the conceptions of syphilis were up to the time of J. Hutchinson; the vast literature referring to pre-Hutchinson cases of syphilis is practically valueless as judged by modern standards of diagnosis.

But even though proven cases of post-mortem infection with syphilis are very rare, this risk cannot be regarded as negligible, and reference is made by Dr. Trub to the investigation of Prof. E. Hoffman, who addressed a questionnaire on this point to numerous pathologists and specialists in syphilis. He obtained 29 answers, and in eight of them accounts were given of more or less difinite cases of post-mortem infection. One of the most interesting but most incomplete chapters is that concerned with syphilic infection without a primary chancre. At least 16 such cases have been recorded in which the patient was a medical man, and in five of these cases the infection was extragenital and vocational.

An important question asked by Dr. Trub is: How shall the medical man who has contracted syphilis comport himself with regard to his professional work? The answer given is quite definite. In the primary and secondary stages, and when there is a definite rash on the hands and arms, no medical man should attempt to operate or attend a maternity case. When the syphilis is in the tertiary stage, it may be sufficient to protect the limbs with rubber or plaster, but it would be well if full work were not resumed until vigorous specific treatment has been shown by the Wasserman reaction to have been successful. Even then the medical man should undergo systematic serological and clinical examination from time to time, keeping an alert eye for signs of syphilis of hands and arms.

If the Wasserman reaction is positive, it is necessary to be careful, and, preferably, to discontinue medical practice, even when there are no symptoms. This is a hard saying, and obedience to it must often entail a self-sacrifice verging on economic ruin. But its neglect may sometimes have far-reaching consequences, and there have undoubtedly been several cases of syphilis transmitted to patients by midwives and medical men. In one instance alone a midwife has been known to infect 30 women. This case was recorded in 1883, and it is to be hoped that with our present knowledge—diagnostic and therapeutic—of syphilis, the vocational syphilis of doctors has become a much less serious matter than it was.—(*Lancet*, Aug. 18, 1923, 2, 7, 345.)

Toxicity and Trypanocidal Activity of Tartrobismuthate and Its Relation to the Treatment of Syphilis

C. N. Myers and H. B. Corbitt of H. A. Metz Lab., Brooklyn, have reviewed the literature and it shows conflicting reports regarding the effects of bismuth therapy. The experiments made in this laboratory were performed according to American methods to determine toxicity and trypanocidal activity of soluble tartrobismuthates, which crystallize as alkaline salts. "Luatol", which was used for comparison purposes, was used in both aqueous and oily suspension.

The test for toxicity used was an adaptation of that described in the 1920 regulations issued by the U. S. P. H. S. Healthy white rats were bought at a weight of from 50 to 80 gm. Injecitons were made into the saphenous vein, the doses beginning at 30 mgm. per kgm. The animals were observed at least 7 days after injection. Autopsies were made upon all that died. Those surviving were later killed and examined.

Microscopic and pathologic findings in the animals dying from the drug included lesions of the kidneys, liver, and lungs in the order named. The maximum dose tolerated per kilogram body weight, i. e., that dose which permitted the survival of 60 per cent. of the animals, varied from 36 mgm. for Luatol to 51 mgm for preparations Nos. 1 and 4. Study of the tables shows that rats with a low percentage gain in weight were not likely to survive the maximum tolerated dose.

In testing the action of sodium potassium tartrobismuthate on experimental trypanosomiasis in rats, the method used by Voegtlin and Smith was used with certain modifications. Control tests with salvarsan were run. The technic of inoculation of the rats involved the intraperitoneal injection of the organisms. The method of treatment was that of injecting the solution of the saphenous vein. The minimum effective dose as defined by Voegtlin and Miller in 1922 is that "required to bring the parasitic count within 24 hours to a trace or negative or in other words, the dose which kills from 100,000 to 250,000 parasites per cm. of blood. As a rule

the blood is again examined at the end of 48 and 72 hours after treatment." Experience in these tests shows that the M. E. D. and often in 30 to 60 per cent. larger doses, the maximum reducing effect is exerted at 48 or 72 hours.

In comparing the results of treatment with salvarsan and with those of bismuth therapy, it is observed that on infections such as are used in the testing of arsenicals there was no trypanocidal action until the minimum lethal dose was approached. Even here the action was so slight as to be of no value in obtaining a minimum effective dose as was done with the arsenicals. All rats treated with tartrobismuthate alone died under 48 hours the result expected of rats receiving no treatment. With rats given bismuth and arsenic in insufficient amount death was delayed another 48 hours.

In conclusion the authors state that there is a marked difference between the toxicity of the water soluble and the insoluble drug. Bismuth preparations examined have shown no trypanocidal activity either intravenously or intramuscularly, with the exception of a slight inhibition in larger intramuscular injection. Synergistic action of arsenic and bismuth shows some promise. In comparison with the arsenicals, bismuth is inferior, but in its relation to mercury it may find a place in syphilis therapy.—(*Am. J. Syph.*, April, 1923, 352.)

Action of Parenteral Injections of Milk in Different Internal Diseases

Hoegler and Seidel attribute the untoward effect of parenteral injections of milk to its high content of microorganisms and toxins. If milk is obtained under aseptic precautions and sterilized (this is obviated by the use of aolan) intramuscular injections of 5 to 10 cc. are hardly ever followed by fever or subjective disturbances. They had favorable results in arthritis, bursitis, tendovaginitis and bronchitis. They observed a distinct diuresis 8 to 12 hours after the injections. This may be in connection with the effect of the treatment in inflammatory processes.—(*Wien. Klin. Woch.*, May 3, 1923.)

Surgery

Regional Anaesthesia

The various forms of conduction anesthesia, from the blocking of the spinal nerve roots by an intradural injection, to the obtunding of peripheral nerves by local infiltration, have fields of usefulness greatly modified by the condition of the patient and the temperament of the operator. While skillful mental diversion, narcotism, light nitrous oxide amnesia, or other expedient may overcome the fears and prejudices of the patient, any of the methods of regional anesthesia may give the operator a sense of greater responsibility than does ether, may seriously encroach on his time, effect his mental poise, and hamper his activities. It is also true that without a wise selection of the type of anesthetic for the particular case, the great value of local anesthesia is largely destroyed.

It is with the bad operative risk that the gauntlet is thrown down to the user of regional anesthesia. "Will the operation be rendered safer to the patient? Can I operate upon patients considered inoperable with inhalation anesthesia?" "The patient might endure the operation alone, but could he withstand the anesthetic?" These are questions which must now be answered in the affirmative. With regional anesthesia, the surgeon may no longer delay of decline to operate because the patient is a poor anesthetic risk. The question, "Will I operate with ease and facility?" is entirely subordinate to that of the safety of the patient.

When speed and absolute relaxation are required, spinal anesthesia with the advantages of instant action, complete muscular relaxation, and associated peristaltic contraction, has the greatest value and also from the depression of the respiration and the great fall of blood pressure which it causes, has the largest potential danger. In the hypotension of shock, hemorrhage, toxemia, or asthenia, while the skillful associated use of adrenalized intravenous injections may reduce its dangers,it remains unsafe for general use. In any case, only by the intelligent application of physiological principles, with reference to the drug used, the specfic gravity and percentage concentration of the solution employed, the point of injection, the amount of solution injected, the amount of cerebrospinal fluid withdrawn, and the force with which the injection is made, can uniform and satisfactory results be obtained. Modification of any of the points mentioned will influence the height and intensity of the analgesia, the degree of muscular paralysis and relaxation, the respiratory depression, and the associated fall of blood pressure.

In brief, the degree of muscular relaxation, completeness of epicritic sensory loss, and the duration of the analgesia, varies directly with the dose, the concentration, and the activity of the drug employed. For example, the action of 15 centigrams of procain is comparable to that of 7 centigrams of tropococain or 6 of stovain. Three centigrams of stovain give only about 15 minutes of analgesia, 6 centigrams of stovain about 90 minutes. Six centigrams of stovain in 4 per cent. solution, injected in the upper lumbar region, will usually produce a fall of from 60 to 80 milligrams in the blood pressure, which passes off in 40 to 60 minutes; 9 centigrams of butyn similarly injected may cause such a complete vasomotor relaxation that the head and chest must be lowered for 3 hours after the injection to maintain a perceptible pulse at the wrist. As the vasomotor centers controlling the upper part of the body are located in the thoracic cord, the effect on the blood pressure depends upon the height as well as the intensity of action of the drug.

Selected in bad risks, the mortality of spinal anesthesia may easily reach one in two hundred injections, and only by wise selection and very careful supervision may the mortality be reduced to one in ten or fifteen thousand. Fortunately, the later secondary symptoms from spinal anesthesia, including headache, have been largely overcome by the use of better preparations and the avoidance of dural leakage by using only needles of small caliber.

Sacral, caudal, and paravertebral anesthesia, while slower and somewhat less certain, and at times more difficult to induce than spinal anesthesia, avoid the danger of thecal puncture, usually produce little effect on the blood pressure, and give a very enduring and most valuable analgesia for operation on the pelvic organs, especially for carcinoma of the rectum. Despite the multiple punctures and skill at times required, the safety and slight effect on the general system give these methods an important place in surgery. Splanchnic anesthesia, induced by deep paravertebral injections and by retropelitoneal injections after opening the abdomen, widens the field of local infiltration anesthesia for visceral surgery, enabling the most serious operations such as partial gastrectomy, nephrectomy, splenectomy, to be completed in patients hitherto considered too weak to withstand the operation.

Massive local infiltrations by weak, slightly toxic analgesic solutions have a large field of usefulness. The low toxcity, stimulating and enduring action of procain, when combined with adrenalin, enable one to use such large quantities of the solution that depression, toxicity and dehydration in the patient are combated at the same time that the anesthesia is produced. No known anesthetic is so safe in the greatly debilitated patient and in hemorrhage or shock, the injection may render a blood transfusion needless.

The amount of the solution that may safely be employed seems almost unlimited so that by a "shot-gun" injection, effective analgesia without exact anatomical localization is available to the surgeon of average skill. The injection of from one to three thousand mils of the one-fourth per cent. solution of procain containing one to sixty thousand, to one to one hundred thousand parts of adrenalin in Ringer's solution of physiological saline is not only relatively safe, if blood vessels are avoided, but usually will materially improve the condition of the patient and by stimulating elimination, render the free use of narcotics and sedatives safer than would otherwise be the case.

Inter-abdominal amputation skillfully conducted under local anesthesia with nerve blocking, is a revelation to any surgeon who does not realize the great field of local anesthesia. To facilitate intra-abdominal manpulation, an associated heavy infiltration of the preperitoneal space about the wound is most valuable. As soon as the abdomen is opened, the finger or hand is gently introduced as a guide, the needle repeatedly carried down to, but not through, the peritoneum and 200 to 600 mils of the solution injected. By diffusion, this gives a desirable degree of splanchnic anesthesia.

In such acute infections as pneumonia, nephritis, peritonitis with a sthenic patient, when the shortest operation with complete muscular relaxation and with the least manipulative exposure or protoplasmic disturbance is desirable, spinal anesthesia is preeminent. In the depressed exhausted, deeply toxic, dehydrated, starved, shocked, semicomatose or intensely anemic patient, spinal anesthesia is dangerous and massive infiltration anesthesia with weak adrenalized procain solution is invaluable. In view of the relatively slight danger from prolonged conduction or infiltration anesthesia, it is questionable if any operation requiring over 2 hours for its completion should ever be conducted under inhalation anesthesia alone.—(W. Wayne Babcock in *S. G. O.*, Sept., 1923, 37, 393.)

Artificial Pneumothorax

F. G. Chandler, of Charing Cross Hospital, London, feeling that as artificial pneumothorax has become an established method of treatment, a brief description of its nature, its aims, its possibilities, and its results, may be of interest.

By artificial pneumothorax is meant the introduction of air, nitrogen, or other gas into the pleural cavity. This can be effected when the two layers of the pleura are in apposition, provided that they are not adherent; or it can be induced when the two layers are already separated by fluid, the fluid first being replaced by gas; that is to say, while the fluid is being drawn off, air or other gas is allowed to run into the pleural cavity.

The therapiutic object of this treatment is to put the lung at rest, to prevent the spread of disease by the lymphatics and bronchial tubes, to prevent dissemination of bacilli or toxins by the blood-stream, to collapse the cavities of phthisis, to compress the dilated bronchi of bronchiectasis, to relieve the lung of strain, and to render it mechanically, and perhaps nutritionally, unfavorable to the growth of pathogenic micro-organisms.

What are the clinical indications for this treatment? The best way to judge of its merits and the best method of determining its precise indications, is to say, "In what circumstances would I adopt it for myself, or for a member of my own family?" If this can be answered, then are the indications clear.

Artificial pneumothorax has been used most extensively in phthisis, but there are many other conditions in which, the procedure is called for. For, except for the very rare and usually avoidable complication of air-embolism or pleural shock, one may say that the treatment never does harm, even if it fails to cure, and it gives rise to no pain.

Clive Riviere says that "What may be called the classical case for artificial pneumothorax is one of severe one-sided disease, with the other lung clear or nearly clear." He quotes Forlanini's aphorism: "Pneumothorax is indicated every time that life is threatened by the extension of a local (tuberculous) lesion."

Pneumothorax treatment is **indicated:—**

1. If tuberculous disease of the lung is unilateral and progressive in spite of the most careful treatment; in fact, if the patient is not rapidly improving.
2. For recurrent, dangerous, or distressing hemoptysis.
3. In a case of pleural effusion, if there is evidence of active tuberculosis in the lung of the same side, such as the presence of tubercle bacilli in the sputum, or a history of hemoptysis, etc., and the other lung is clear or fairly clear; in such a case I should first replace the fluid by oxygen or air, and then maintain the pneumothorax.
4. For recurrent chronic pleural effusion and tuberculous empyema.
5. In certain cases of bronchiectasis.
6. In cases of foreign body in the bronchus that cannot be removed through the bronchoscope; in this case I feel that it is the only possible treatment that can give relief, short of a very grave surgical operation.
7. For diagnostic purposes for revealing tumors, Hodgkin's disease, etc., by radioscopy and thoracoscopy.
8. In certain cases of abscess of the lung, or a localized empyema that cannot be found by exploration.
9. As a preliminary to operation in certain cases; and

The contra-indications are:—

1. Active disease in both lungs; but this rule must not be applied too rigidly, for many cases have been successful in which there was some disease on the other side.
2. Early phthisis which will probably become arrested by ordinary treatment. Far greater efforts must be made generally towards diagnosing the disease when it is really early. Cases diagnosed as early are frequently seen in which the disease is in reality advanced.
3. Advanced emphysema or asthma are said to be contra-indications, but I have induced a pneumothorax in an asthmatical subject with no apparent ill-effects.
4. Extensive tuberculous disease elsewhere would be a contra-indication, as would
5. Reluctance, a neurotic timidity, or lack of patience, or of confidence on the part of the one to be treated.—(*Practitioner*, Sept., 1923.)

Glucose Blood for Transfusion

Depuy de Frenelle et Ribereau say glucose, 4.7 per cent. retards coagulation one half hour and 10 per cent. glucose retards it one hour. Five hundred c.c. of a mixture of one part blood to four hundred parts of 4.7 per cent. glucose solution is sufficient for the worst cases.—(*Le Prog. Med.*, Nov. 18, 1922.)

Diagnosis and Treatment

Endocrinology To-Day

Edinburgh, under the editorship of Dr. Thos. Stephenson, holds in Scotland about the same position as *The Practitioner does* in England, and is perhaps not so well known to Canadians as it should be. It published in October a special number on Endocrinology.

The presentation of a special number devoted to only one department of endocrinology—the thyroid and parathyroid glands —requires no apology. Endocrinology has become established as a science; its future is assured, but careful and judicious handling is necessary to separate the wheat from the chaff.

The Thyroid Apparatus. While the importance of the other glands of the endocrine system must not be underestimated, there is little doubt that the thyroid acts to some extent at least, as their controller. It is just over thirty years since Horsley demonstrated its intimate connection with myxœdema, at a time when its function was so little known that it was provisionally named the 'thyroid body."

The thyroid gland is made up of a number of closed vessels containing a yellow fluid known as the colloid, which contains the iodine compounds. The gland pours into the blood-stream a relatively simple compound thyroxin, which acts as a catalyst, increasing the rate at which the metabolic reactions of the body are carried out. Deficiency of thyroxin in the blood results in sluggish metabolism, and in typical myxœdema this can be revived by means of thyroid therapy; at the same time it is wrong to attribute all cases of lowered metabolism to thyroid deficiency.

The two glands mainly involved in the regulation of the metabolic equilibrium are the thyroid and the adrenals, and of these the thyroid is the more important.

That the thyroid and other endocrine glands are largely under nervous control, is undoubted. The internal secretions are under control of the nerves by an arrangement which is well ordered and under automatic control.

The main chemical fact about the thyroid gland is that it is the only organ in the body that elaborates iodine compounds from the normal diet of the individual. This iodine is discharged into the blood-stream as thyroxin.

The other part of what for convenience we may term the thyroid apparatus consists of the parathyroid glands. These, although anatomically closely related to the thyroid, are independent of it in development and function. They are kidney-shaped bodies, usually four in number, situated on the borders of the lateral lobes of the thyroid. They contain no iodine, and their function appear to be connected with the regulation of calcium metabolism and the neutralization of toxins. Parathyroid therapy is still in its infancy, and cannot be expected to acquire the status of thyroid therapy, but it has shown its value in certain cases, a value that will increase with further knowledge of the parathyroids and their functions.

Hypothyroidism. The condition known as hypothyroidism manifests itself at certain periods of life, and if the efficacy of thyroid treatment in numerous conditions of ill-health is any criterion, thyroid deficiency must be a very potent factor in a large majority of chronic diseases. It must be admitted, however, that in very few conditions of hypothyroidism is thyroid deficiency the only underlying defect. Even in myxedema, the most typical manifestation of hypothyroidism, deficiency of the secretion of other endocrines is also evident, so that it is practically impossible to find a disease exhibiting signs purely of hypothyroidism.

Of the causes of hypothyroidism toxic infection is probably the most important. Toxemias, especially of intestinal origin, with lack of iodine and excess of calcium in the diet, are the apparent causes of ordinary goitres, the enlargement of the gland being compensatory. The absorption of toxins, particularly in adult life, from the buccal cavities and digestive tract undoubtedly depresses the thyroid.

The problem of hypothyroidism generally consists not merely in its recognition, but in the discovery of the underlying cause, for while the deficiency of the thyroid secretion can be rectified by administration of the thyroid hormone, removal of the toxic influences depressing the thyroid is equally necessary and important.

The Thyroid and Immunity. It is generally accepted that the thyroid secretion has an antitoxic action against infection, and there would appear to be sufficient proof of this in view of its therapeutic value in chronic infections. This claim to antitoxicity, however, requires analysis, for under certain conditions the secretion itself is toxic. McCarrison has shown that injection of thyroid hormone into a healty animal's

blood does not affect the animal, but when combined with amino-acids it produces marked toxic effects. The combination of toxin and thyroid hormone increases the toxic effects of the former.

What influence, therefore, has thyroid on immunity? In a normal healthy body there are present at least potentially, certain powers of protection against toxic products. The ordinary metabolic changes in the body lead to the production of toxic substances, but these are neutralized by physiological processes in which the thyroid has considerable share.

Endocrine Nomenclature. As always happens with a rapidly growing science, the nomenclature of endocrinology is undergoing a process of evolution. The term "ductless glands" soon gave way to "glands of internal secretion," which later became "endocrine glands." The secretions of these glands, hitherto termed internal secretions, are now—perhaps more correctly—termed "incretions." The nomenclature of the incretions themselves, or rather of their assumed active principles, has presented the greatest difficulty. When Starling in 1907 first regarded these as chemical messengers and styled them "hormones," the name proved a good one and quickly became popular. Soon, however, it was found that some of these incretions did not excite but restrained, and Schafer in 1913 suggested a more elaborate terminology in keeping with these advances. He called the active principles "autacoids," and these he subdivided into hormones or excitants and "chalones" or depressants. Such a subdivision was certainly more scientific, but it looks as if it too will become obsolete. The discovery of thyroxin and its action would seem to render useless most of the terms hitherto in use, and as Professor Swale Vincent remarked in a recent lecture, we shall be fortunate if the word-coining activities should cease for a time. The term incretion or internal secretion should suffice for the present.—(*The Prescriber*, Edinburgh.)

Sodium Chlorid Restriction in Hypertension

The treatment of hypertension with diets of low salt content is not new says Warren T. Vaughan. Such dietary measures have been studied in the past chiefly by various French observers. In this country, as a rule, salt restriction has not been pushed to an extreme, and only occasional investigators have insisted upon a chlorid intake of less than two grams per day. Opinions of the efficacy of rigid salt restriction have been distinctly at variance. This appears due, in part at least, to the fact that salt restriction has not often been enforced rigidly enough to produce the desired results. Allen and Sherrill, who have given much time to a study of this method, find that best results are obtained with a chlorid intake sufficiently reduced that no more than one-half gram of sodium chlorid is excreted in the twenty-four hour urine. Since this rigid restriction occasionally causes deficiency symptoms, they insist that no clinician who has used salt restriction with unsatisfactory results, has used it properly unless he has observed salt deficiency symptoms.

The Morristown investigators have worked on the hypothesis that hypertension, particularly uncomplicated hypertension, is a disease resulting from error in salt metabolism, and that individuals with such symptoms are unable to tolerate normal quantities of sodium chlorid. Their results tend to substantiate this claim. As yet they make no suggestion as to the underlying cause for the error in salt metabolism.

Normal blood pressure was restored in 18.9 per cent of 180 severe cases, therapeutic success without complete restoration of normal pressure was obtained in 41.9 per cent, and transitory benefit followed by relapse or death occurred in 8.9 per cent. Complete failure was encountered in 30.5 per cent. Treatment lasted over periods from one month to one year. The entire group was divided into four classes. Those with pure hypertension and high plasma chlorid values, those with uncomplicated hypertension and high plasma chlorid values, those with uncomplicated hypertension and relatively low bood chlorids, cases with associated nephritis, and those with diabetes. Best results were observed in the first group. A suggested explanation of less successful results in the second group is that in the first the hypertension was more purely functional and associated with the high chlorid readings, while in the second the increased pressure followed more permanent organic changes. Poorest results were observed in those cases associated with nephritis. Complicating diabetes, when properly treated, in no way interfered with satisfactory results from salt restriction. Although uncomplicated cases were classified according to high and low plasma chlorid content, the authors found no constant correlation in their series between the chlorid level and the degree of hypertension. The authors devote little attention to a classification of their cases according to the degree of arteriosclerosis present. We hope that this phase will receive further study.

Allen and Sherrill found no such close association between obesity and hypertension as was formerly assumed to hold. The majority of patients had normal or slightly subnormal body weights. Improvement occurred independently of the presence or absence of abnormal weight, except when increased weight was due to fluid retention with or without recognizable edema. They found that a normal blood urea nitrogen concentration on a liberal protein diet is probably as conclusive indication of adequate nitrogen excretion as any other single test. Retention of urea or nonprotein nitrogen was found to bear no relationship whatever to the degree of hypertension. In those cases with impaired renal function and nitrogenous retention, protein intake was restricted along with salt intake, but with normal nitrogenous metabolism the protein intake was not reduced at all. In some of the more severe nephritis it was found necessary to first treat the nephritis with a low protein diet and later to reduce the salt intake. Otherwise alarming uremic symptoms occasionally developed. The latter were quickly relieved by the giving of ten grams of sodium chlorid daily. Albuminuria and cylindruria were usually uninfluenced by salt restriction. The minority of cases showed unmistakable diminution thereof.

Increased plasma sugar values have recently been described in essential hypertension and improvement in symptoms has been ascribed to reduction of carbohydrate intake. Allen and Sherrill found the blood sugar values normal in a higher percentage of group I cases than in the second group with low plasma chlorid levels. In the third group, associated with nephritis, the plasma sugar was still more constantly elevated. It is suggested that the increased sugar values occur at a later stage of the disease, when permanent organic changes have occurred and may be due to arteriosclerotic changes in the pancreas.

In cases successfully treated there was a fall not only of the systolic but also of the diastolic blood pressure. The latter was distinctly more stubborn and was reduced to a less extent than the former. It is a matter of general observation that hypertension cases in which the blood pressure has been reduced to too great an extent are subjectively and often objectively much more seriously affected than when the pressure was higher. For this reason certain authors have assumed that the development of hypertension is primarily a compensatory affair and attempts should not be made to alter it to too great a degree. When the blood pressure has fallen with resulting unpleasant symptoms, it is usually found that the systolic pressure has been decreased out of proportion to the diastolic reduction and that the pulse pressure has thereby become unusually small. It appears probable that the unpleasant symptoms have been due to the resulting small pulse pressure, with correspondingly reduced functional capacity of the cardiovascular apparatus. If strict salt restriction will reduce the diastolic pressure proportionately or nearly proportionately to the systolic reduction, we will be in a position to understand and to expect good clinical results from the method advocated by Allen and Sherrill.

The results in cases treated by Allen and Sherrill were obtained after treatment varying from a few days to as long as one year. This indicates the necessity of perseverance in the diet even though immediate improvement is not observed. Those cases responding promptly with fall in blood pressure are of better prognosis than those in which the blood pressure is reduced only after a longer period. The diet was regarded as "salt-free" when the sodium chlorid content of the urine was kept at or below 0.5 gm. per day. Most of the individuals remained on such a diet continuously. Occasionally privation symptoms occurred with weakness, anorexia, vertigo, etc., necessitating an increase in the salt intake. A careful balance must finally be attained, the patient being given a sufficiently low salt intake that he may show no salt retention symptoms and yet sufficiently high that privation symptoms do not supervene. Since the levels at which both groups of symptoms appear vary in individual cases, this sometimes requires patient standardization. The most difficult cases are those in which the pressure is only slightly reduced by a chlorid restriction which causes privation symptoms. The best clinical diet in these hopeless cases is afforded by a chlorid allowance which gives a mixture of mild privation symptoms and mitigated hypertension symptoms.

Chlorid restriction was found to act favorably on the serious accompaniments of hypertension, such as cardiac failure, incipient pulmonary edema, retinitis and vascular crises, including to some extent angina pectoris.

The author emphasizes that their work has been done on a series of severe cases and that the probability of improvement would be correspondingly greater in a series with mild or early hypertension. No attempt is made to explain the presence of

(*Continued on page 296*)

The Medical Times

A MONTHLY JOURNAL
OF
Medicine, Surgery and the Collateral Science
ESTABLISHED IN 1872

EDITED BY
H. SHERIDAN BAKETEL, A.M., M.D., F.A.C.P.
ARTHUR C. JACOBSON, M.D.
Associate Editor.

Contributions.—EXCLUSIVE PUBLICATION: Articles are accepted for publication on condition that they are contributed solely to this publication.

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UNITED STATES (Including Alaska, Cuba, Mexico, Porto Rico, Hawaiian and Philippine Islands)	$2.00 per year
CANADA	$2.25 per year
FOREIGN COUNTRIES IN POSTAL UNION	$2.50 per year

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MEDICAL TIMES CO.
ROMAINE PIERSON, *President*
H. SHERIDAN BAKETEL, *Treasurer*
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95 Nassau Street - - - New York

NEW YORK, DECEMBER, 1923

Ghandi a Mass Hypnotist

It was by no accident that hypnotism originated among the Hindus. The members of that race are more than any other people impressionable and neurotic.

It was upon Hindu convicts that Dr. James Esdaile, of Montrose, Scotland, in 1845, made his impressive record of surgical operations under hypnosis. He performed over one hundred operations successfully, under a severe test imposed by the Deputy Governor of Bengal. Eventually he had a record of 261 painless operations with a mortality of 5.5 per cent. (See his "Mesmerism in India," 1846).

When Esdaile returned to Scotland he found that Anglo-Saxons were not especially susceptible to hypnotism.

The point that we wish to make is that it is in mass hypnotism that an explanation should be sought for the curious sway over the Indian populace attained by such leaders as Ghandi. Yet so far as we know this obvious solution of a curious social situation has not been taken into any account.

Foreign Missionaries

We are being told that in such places as Essen, in the Ruhr district, thousands of the wives of the workers may be seen standing in line and waiting for their supplies. On an average they have to wait five hours to get their ten pounds of potatoes, and even then they are not sure of securing this. From the potato line the women step directly into the bread line, there to wait another five hours, and so on. The women have no time to do their housework and large numbers have diseases arising from the long standing.

We don't doubt that this is true, but we have never noticed any report from the observers who are at such pains to tell us about the German women on the women in America who wash and iron all day and scrub floors, many of them with prolapsed uteri.

These observers are not the least bit sentimental about the plight of their fellow countrywomen.

A Plea for the Surgical Patient

It has long seemed to us that surgical patients are subjected to too much fussing both before and after operation.

Things are done just before operation which interfere with a patient's sleep, while after operation his endurance is sorely tested under a barrage of medication, hypodermoclysis, unnecessary attentions from the nurse, and intravenous injections, all perhaps indicated if it be assumed that the victim neither needs nor craves rest and sleep.

Can nothing be done to call a halt to this over-zealousness, from which few surgeons seem to be free?

Haven't enough surgeons themselves been subjected to this sort of thing to awaken effective protests? We recall how bitterly a Brooklyn surgeon complained about the unnecessary backache he suffered from after an operation and how earnestly he tried to get his colleagues to spare their patients what he himself had gone through. It must be that surgeons seldom mount the operating table, else there would be a reform in this matter of fussing about which we are writing.

Over-zealous care, in our opinion, is as bad in its effects as its antithesis, neglect.

Coming Events

Is not modern medical science and art in danger of being reduced to absurdity in a certain respect? For a long time the general practitioner has been charged with many derelictions; his facilities and equipment have been restricted and he has not always been able, seemingly, to do justice to his patients. But now even the highly equipped hospital physician or specialist is in a quandary. He himself cannot keep up the pace nor read the literature. Even whole staff groups are handicapped. Modern medicine is fast obliterating the individual. Perhaps it will obliterate whole groups.

Will there be a return to sanity through the growing force of circumstances? It is a question whether any more diagnostic and therapeutic injustices were done patients twenty-five years ago, when men relied more on their common sense and were less often misled by the laboratory, than are done today.

What are the probabilities? Some iconoclastic genius, some medical Mussolini, will have to appear full-armed from the head of Zeus, and topple over the whole top-heavy edifice of super-science. Let us at least fervently hope so.

Then there will be a revolution. Instead of an army of specialists, there will be practitioners who will, through simple nutritional and hygienic methods, so enhance the resistance of children and adults alike that the streptococcus will be put upon the retired list.

Tonsillectomy will then be classed as malpractice, with occasional exceptions comparable to properly indicated abortions.

But such a genius and such a revolution wait upon a new economic order. We know the principles of nutrition and hygiene now, but, necessarily, they are seldom applied. We all know why.

One of the sanest deliverances we have ever read upon this matter of over-working the purely technical resources of modern medicine is the recent paper of Dr. Lewis A. Conner in the *Journal of the American Medical Association* (September 15).

Think of all our present-day tinkering with illness and our inability, after all, to take care of the sickness which is everywhere, and then reflect that it is the withholding of valuable land from use which restricts economic opportunity and produces involuntary unemployment, which, in turn, is the underlying cause of low wages, poverty, disease and crime.

Real economic reform would scrap most of the present armamentaria of medicine—and such a result would be no blow to science, in the best sense of that term.

Food for Thought

Suppose, says Dr. Charles L. Dana, that we do finally succeed in stamping out tuberculosis, smallpox, typhoid, measles and all infectious diseases. If this germ-free, uninfected mass is made up largely of the neurotic, the insane, the defective, the delinquent and the crippled, what, asks Dr. Dana, have we gained by this racial asepsis? We may have indeed no tuberculosis, but we may have 50 per cent. of morons! Already we have 30,000 to 40,000 feeble-minded and more than that number of insane (in the State of New York).

Well, there still remains war whereby the decimation of these salvaged masses may be effected. And in so far as the defective classes increase in numbers by reason of the racial asepsis that Dr. Dana speaks of, by so much will the staging of wars be facilitated.

Our point is that neither Dr. Dana nor anyone else need worry about what society will do to keep down the number of morons, and at the same time make a certain use of them.

Mars will take care of that.

There is some practical difficulty about the business. Our wars are not carried on upon a sufficiently grand scale, they are waged at too infrequent intervals, they do not last long enough, and they are not as savagely conducted as they might be.

Perhaps, however, with the inevitable increase of morons such drawbacks will be less and less troublesome. And in the meantime all other factors making for war are flourishing amazingly.

Continuous warfare would be a wonderful scavenger. Is it not at this, then, that we should constantly aim? Such would seem to be the goal of the world's most eminent "statesmen."

Miscellany

CONDUCTED BY ARTHUR C. JACOBSON, M. D.

Please Page Mr. General Practitioner!

Great heavens! The *American Medical Association Bulletin* (official journal of the House of Delegates) reprints in its October issue, from the *New York State Journal of Medicine*, an editorial which is a strong plea for the development, if you please, of more general practitioners.

Please page Mr. General Practitioner! He is wanted badly again.

"Inspire him," says the editorial, "with the idea that the general practitioner has unlimited possibilities."

We must "develop a greater number of the fine, general practitioners which the profession needs."

We thought that there were no general practitioners; that they had all "passed;" or that they were kept in close confinement somewhere; and that there were never to be any more.

Well, we are glad to see such glimmerings of returning professional sanity.

Welcome, old friend!

A Medical Prophet

In a paper written by John Uri Lloyd, of Cincinnati, we recently came across an interesting quotation from Dr. Joseph Rodes Buchanan, who flourished in the Middle West many years ago:

"In human affairs prophecy runs on occult lines. One of these occult lines I have discovered. It is the law of periodicity, or at least one law. I know not how many other laws may exist. . . . This law enabled me in 1859 to predict six years of calamity to the United States (in the *Louisville Journal*), and enables me now to predict and fearlessly announce a period of calamity thirty years hence, culminating to the worst in 1915. Our first era of calamity was from 1812 to 1818, signalized by war and financial distress. The second was at its Nadir in 1865-'66—the utter prostration from war. The third will realize its worst in 1914 and 1915—a period I cannot expect to witness. What form will it assume? That I do not predict."

Hypertension

(Continued from page 294)

an abnormal salt metabolism predisposing to hypertension. It is the experience of most of us that individuals with hypertension are unusually heavy salt eaters and it may be that the disease may arise in part from chronic overload.

The actual limitations of our knowledge of the etiology of hypertension are evidenced by the multiplicity of therapeutic procedures. The majority, such as hydrotherapy, bleeding, vasodilation, rest, etc., are purely symptomatic. It has long been supposed that hypertension is in some way related to error in protein metabolism, and protein restriction has therefore been the most generally accepted treatment. Just as typhoid fever and the paratyphoids were formerly classed under the general diagnosis of typhus fever, so hypertension was formerly associated exclusively with chronic nephritis and considered to be an event of the later stages of Bright's disease. With the recognition of essential hypertension as a distinct disease which may occur with minimal renal lesions a distinct diagnostic advance was made, but the treatment has continued to be based upon the older concept of protein restriction in renal disease. We can scarcely yet state that an error in protein metabolism is not the cause of essential hypertension. It does appear, however, that nitrogenous metabolism varies around normal limits in this disease and that the feeding of relatively high protein diets in no way interfered with good results from salt restriction. Most experimental work with high protein diets has been directed to the production of arteriosclerosis rather than hypertension. Thus Newburgh has recently produced arteriosclerosis strictly by high protein feeding. However, the production of such a condition experimentally in an herbivorous animal is quite dissimilar to the same procedure in man.

Strause and Kelman fed hypertensive individuals with and without associated nephritis, varying daily protein intakes. They could discover no relationship between the protein intake and the blood pressure. Nitrogen retention was influenced by changes in nitrogen intake but the blood pressure could not be so influenced. Squier and Newburgh, after feeding patients with hypertension amounts of protein well over 150 gms. per day, concluded that high protein diets over a short period have no effect on the blood pressure.

The occurrence of hyperglycemia in hypertension, emphasized especially by Herrick, may be explained merely as a secondary phenomenon resulting from organic changes in the pancreas, or, in cases associated with nephritis, as analogous to the nitrogenous retention.

It should be noted that the findings of Allen and Sherrill with regard to hyperglycemia are somewhat at variance with those

recorded by Härle. Whereas the former found the plasma sugar value most constantly elevated in hypertensive cases with nephritis, Härle found the reverse to be the case. In one-half of cases with kidney lesions and hypertension the blood sugar was on the upper border of the normal range. Frank hyperglycemia was rarely observed. On the other hand, in cases without demonstrable renal lesions, a definite hyperglycemia was seen in one-fourth and an upper normal range in another one-fourth. Botti found blood sugar increased and sugar tolerance diminished in the presence of hypertension, especially when associated with arteriosclerosis.

Following the work of Cannon, many have suggested that hypertension results from an increased adrenalin discharge in the system. Hülse was unable to demonstrate increased adrenalin concentration in the arterial or venous blood of hypertensive individuals, even though his frog preparation was sensitive to concentrations of adrenalin of one to one billion.

Orr and Innes, working on the hypothesis that pressor substances are derived from protein split products, regulated the fluid intake of their patients, and found that with increased fluid consumption the blood pressure was somewhat reduced. Their interpretation was that the hypothetical pressor substances were diluted, and perhaps to some extent removed by the increased diuresis. Their variations were not, however, unquestionably beyond the normal range.

Among other therapeutic measures based upon conceptions of the ediology of hypertension we must still number prohibition of nicotine and alcohol, reduction of overweight and removal of focal infection. The purin bases have ceased to incite terror.

One cannot say that it has been shown that hypertension is due to an error in salt metabolism. Nevertheless it is worthy of note that Allen and Sherrill have successfully relieved a fairly large proportion of their severe hypertensive cases by rigid restriction of salt intake without the application of other therapeutic measures.—(*Jour. Lab. & Clin. Med.*, Sept., 1923.)

Investigation of the Prognostic Significance of Urinary Permanganate Reaction in Pulmonary Tuberculosis

Z. P. Fernandez, Deputy Tuberculosis Officer, Leeds, believes that in a protracted illness like tuberculosis any guidance is of vital importance to the family physician to judge the progress of the patient or to indicate any line of special therapy. Those with extensive experience of tuberculosis know too well how an advanced consumptive may linger on whilst disease of recent onset may prove rapidly fatal.

Bonnert, of Stockholm (*Tubercle*, September, 1921), reviews the work of Continental observers on urinary unrochromogen or Weisz's reaction, and from his own experience concludes that it is an easier test than Ehrlich's diazo reaction. In cases with amyloid degeneration, the test was found very sensitive and indicated a grave prognosis. Weisz considered that in toxic diseases of metabolism and also in dissolutions of protoplasmic albumen, urochromogen, not found in normal urine, is by oxidation changed into the colouring matter urochrome, which is a protein acid found in normal and pathological urine. According to Burian the diazo reaction is due to increase in excretions of purin base, and is, therefore, a sign of increased katabolism of tissue containing nucleins.

Personal experience of the value of chemical test with cerebrospinal fluid in spotted fever, and Russo's test of methylene blue turning green with typhoid urine drew my attention to the trial of urinary tests in pulmonary tuberculosis. For 18 months the urine of over 100 cases has been tested weekly for the reaction at Leeds Armley Sanatorium. From the beginning it was evident the test failed for early diagnosis of pulmonary tuberculosis. At first dilution advocated by Weisz was adopted. This consisted in diluting 5 c.c. of urine with sterile water to treble the volume and adding to half the portion one drop of 1/1000 solution of potassium permanganate. The other half is retained for a control. One, however, found in some of the urines examined the dilution was strong enough to tint the urine slightly pale yellow, or the drop of permanganate used not sufficient to bring about the colour change. After some trial the following quantitative strength was found useful in the results tabulated below.

With a graduated 5 c. c. pippete 1/10 dilution of urine with water is made in a test tube. This may be approximately done in any physicians office by filling a test tube with one inch of tap water and dropping 10 to 12 drops of urine with a fountain pen ink filler. Shake the colorless urine, and add about 4 to 5 drops of 1/1000 permanganate of potassium. It is not advisable to use more than this quantity of permanganate solution.

A control test without permanganate may be done for comparison. If a pale yellow tint is formed on standing and the control clear examined through transmitted light, the reaction is positive. If the coloration is persistent or deeper every week, the prognosis is grave. If, with special lines of therapy, a positive reaction becomes negative, the prognosis is favorable. Most ambulant cases are negative to test.

The writer has tried diazo reaction in the grave cases. This test failed in the majority of the cases or found wanting to draw any conclusions as far as prognosis in tuberculosis was concerned.

The cases tested for quantitative permanganate reaction weekly are classified under four groups.

Group A.—Bed-ridden cases with pyrexia and disintegrative change in lung. 21 cases were examined every week and found positive and all died within 4 to 6 months. One of the cases in the group illustrates the difficulty of prognosis. A doctor's maid was on duty before admission, when the doctor did not consider her condition grave. She had pyrexia 101° to 102° whilst at sanatorium, and the urinary test was persistently positive. The doctor was surprised at the grave prognosis formed at the institution. She died a month after admission. In another of these cases the test was negative for over four months, when the patient's condition and test changed for the worse, and death occurred three months hence.

Among the cases that ended fatally, in which the urinary test was carried out regularly, only in one case did the test fail repeatedly. This patient had quiescent fibrotic lung disease and active ulcerative intestinal tuberculosis to which she succumbed.

Group B.—23 cases clinically similar to the cases in Group A repeatedly gave negative reaction. All these cases were discharged from the sanatorium ambulant and improved, though clinically one may have at first seriously doubted the prognosis of many of these cases. Later two of these neglected clinical supervision, got worse and died.

Group C.—In 15 of these cases the reaction was positive for some time, but became negative with various lines of treatment, and the prognosis turned out favorable.

Group D.—This group includes over 60 ambulant cases with slight pyrexia and incipient disease. The reaction has remained persistently negative, and in everyone the prognosis has also turned out favorable.

From the above investigation, it is clear this simple urinary test is of some clinical value to the general practitioner, and to the expert, in judging the progress of a case suffering from pulmonary tuberculosis, and in advising any special line of treatment. Those interested in artificial pneumothorax therapy will find the test useful in the selection of suitable cases and in the discontinuation of that treatment in the extreme hopeless cases. The above conclusions in exceptional cases may have to be corrected by one's clinical instinct. Consistency and accuracy in the diagnosis of early tuberculosis form the crucial test of the reliable expert; a correct clinical forecast in certain cases even to them will remain a baffling puzzle.—(*The Practitioner*, Sept., 1923.)

Abortive Treatment of Surgical Phlebitis

Ternier proposes an original and simple treatment which in sixteen cases has given the best results. This treatment is based on the physiopathology of the affection. Since it is an inflammation of the inside of the vein, microbic in origin, which characterizes the beginning of this condition, the dangers and troubles come from thrombosis and embolism. It is advisable to prevent these. To do this the coagulability of the blood should be diminished, which end can be secured by leeching. Patients treated by the application of leeches have a slight hemophilia during forty-eight hours. The desired result is obtained by the first bite of the leech so it is not necessary to await the state of engorgement. Neither is it necessary that the leech be applied in the same region as the trouble. The author applied three to six leeches every other day. In sixteen cases treated in this way the results were excellent and all have been up on the fourteenth or fifteenth day.—(*Gaz. des Hop.*, Oct. 21, 1922.)

Cancer of the Stomach

In a study of this condition M. Loeoer and G. Marchal make it possible to use three methods of treatment.

The first consists in the disinfection of the stomach, the destruction of bacterial pollution, and the suppression of the products of fermentation which are irritating and injurious. This can be accomplished by gastric lavage with physiological salt solution, plain, or with the addition of sodium chlorate, Dakin's solution or hydrogen peroxide.

The second consists in the use of simple foods, e.g., sugars, starches, or peptones. It also includes such foods as milk, which find sufficient ferments in the saliva and leucocytic derivatives when pepsin is lacking in the gastric cavity.

The third consists in the administration of pepsin and hydrochloric acid in sufficient quantities to supply the deficiency in these substances.—(*Le Progres Med.*, Nov. 2, 1922.)

Oral Sepsis and Arthritis

Views as to the causation of arthritis in its different forms have undergone, and are undergoing, change. For some time medical opinion was somewhat prevalent that to oral sepsis, and especially to the condition of the teeth and gums arthritis was chiefly due. This attitude with regard to mouth infection, as a, or rather the, cause of arthritis came to be almost an obsession with some, and anyone who ventured to deny the arguments in its favor was regarded as outside the pale of up-to-date medicine. Of course, the treatment was in keeping with these views, and teeth were extracted by wholesale, if there were signs of pyorrhea alveolaris. More sane and scientific considerations are now in vogue, and while it is freely allowed that oral sepsis may, and no doubt, sometimes does, play a part in bringing about arthritis, it is also held that it is by no means the sole cause, and that the off-hand and oftimes ruthless extraction of teeth will not help matters much. Recently a series of original papers on the subject has been contributed to the *Medical Press and Circular*, March 21st, 28th, and April 4th, by Dr. Llewellyn Jones Llewellyn, one of the first British authorities on arthritis. He does not depreciate the magnitude of the role dental sepsis plays in the genesis of arthritis, but he does deprecate the readiness with which so many medical men have advised, and some do still advise, their parents to have their teeth extracted. Before this is done, a thorough examination should be pursued and the fact should be determined as to whether the cases of arthritis are suitable for the eradication of foci.

Llewellyn, however, believes that there is a stage even in atrophic arthritis when removal of dental or other foci may prevent its development, namely, during the stage of premonitory symptoms. It is pointed out that the number of pyorrheics is legion, but those that develop arthritis also infinitely few. There are other causes in addition to oral sepsis, some of which, as Llewellyn thinks, are of more importance than this, notably, the endocrine glands and the vitamins. Further discussion of the question is impossible here; it only remains to say that it is refreshing to meet with an authority who is averse from attributing to oral sepsis all cases of arthritis and of endeavoring to cure them by having extracted all teeth which exhibit symptoms of infection.—(*Canadian Practitioner*, July, 1923.)

Strychnine Poisoning.

L. D. Hoppe reports a case in a female 20 months old.

Strychnin poisoning is rarely seen in adults. In 467,500 admissions to Bellevue Hospital during the past eleven years, only six cases were observed. The condition is even more rare in infants, one case being seen in the past five years on the Pediatric Service where there were approximately 13,500 admissions during that period.

The following case report is interesting on account of the rarity of the condition and the prompt recovery which took place.

Baby A. G., age 20 months, was admitted April 24, 1922, to the Pediatric Service of Bellevue Hospital. The child was born at full term after a normal labor and was never sick until the present.

About noon of the day of admission the mother found the infant eating some "dyspepsia tablets" which had been left near by. The mother did not know how many tablets the child had eaten although she had a mouth full when discovered. About 20 minutes later the baby became very pale and immediately following this she had a severe convulsion. The mother rushed with the child in her arms to the hospital, only a few blocks away.

The child was desperately ill, being in a tate of continuous generalized clonic convulsions. She was cold, wet with perspiration and etremely cyanotic. The heart sounds could not be heard nor could the pulse be felt on account of the muscle contractions. Respiration was very slow and irregular. The slightest external stimulus caused the convulsions to increase in severity. The extremities were held partially flexed and very rigid.

A mouth gag was inserted and a stomach tube passed. The stomach was thoroughly washed with warm saline; one-half an ounce of castor oil being left in the stomach at the end of this procedure. Meanwhile the child was given on-eighth grain of morphin hypodermatically; the colon was washed out and 5 grains of chloral hydrate given by rectum. Light chloroform anaesthesia was given for one hour and forty-five minutes. Under anesthesia the convulsions ceased, respiration became regular and cyanaosis disappeared, but all would return whenever the chloroform was discontinued.

On account of the dangers sometmies accompanying the prolonged use of this drug, it was decided that other powerful depressants were indicated. Accordingly the child was given 7½ c.c. of a 20 per cent. solution of magnesium sulphate subcutaneously (1 grain per pound body weight). The effect was very beneficial. In 15 minutes the chloroform was discontinued without the return of any of the above symptoms, and the child slept soundly for 4½ hours. On awakening she had a short convulsion and was again given 5 grains of chloral hydrate by rectum. She then slept the entire night. The next morning she appeared bright and happy and showed no effects of her harrowing experience. The temperature urine and blood constituents showed no deviation from the normal. The child was discharged from the hospital in 2 days entirely recovered.

An analysis of the remaining "dyspepsia tablets," made by Dr. A. O. Gettler of Bellevue Hospital, showed that each tablet contained approximately one-eighth grain of nux vomica, or one one-hundredth to one-sixtieth grain of strychnin. The exact amount of the alkaloid consumed by the infant could not be determined as an unknown number of tablets was eaten.

In the absence of any known indiscretion in diet, any gastro-intestinal upset, or any of the other common causes of convulsive disorders in infancy, and with a history of sudden onset following the ingestion of an unknown drug, the circumstances pointed strongly toward strychnine as the cause of the convulsions. The severity of the spasms, with their tendency to increase in severity with any form of stimulation, and the finding of the drug in its alkaloid form in the tablets seems to prove that the case was one of strychnin poisoning. It is interesting to note that the type of convulsions seen in this case resembled very closely those not infrequently seen in dogs known to be poisoned by strychnin. —*Arch. Ped., April*, 1923.

Pregnancy and Heart Disease

Grant Campbell of Montreal believes that close observation throughout pregnancy is essential, particularly for the early s of cardiac failure. If all goes well beforehand, our rec show that these cases stand the first stage of labor well that the second stage is that in which the strain is put upon the heart and that as soon as the cervix is fully dilated, it is good practice to terminate labor, by the use of forceps or otherwise, as may be indicated. The danger of an anesthetic does not seem as great here as in other surgical procedures. In nearly every case included in this paper, a moderate degree of anesthesia was administered—usually chloroform—and in only one of the 159 was any alarming symptom attributed to it, and that case rapidly responded to stimulation. Should signs of decompensation occur in the earlier months, there is little likelihood that pregnancy can be allowed to go safely to term: whether it can be allowed to go along sufficintly to obtain a viable child is a question which must be decided in each individual case. One thing is certain; the heart will be permanently damaged.

As to the procedure when interference is needed, opinions differ considerably. Newell urges that all cases, where the patient's condition does not contraindicate it, should have an abdominal Cesarian section with sterilization at the same time; if the patient's condition does not warrant this an attempt should be made to restore compensation and then to empty the uterus. He urges the use of local analgesia plus morphine and scopolamine for section.

Our experience with such cases at the Maternity Hospital has been limited: only four in this group (No. 15,609, No. 2,417, No. 16,066, No. 13,528) were treated by Cesarian section while seven were aided by the more simple method of induction of labor. Of the four sections, one (No. 15,609) died of cardiac failure forty-eight hours postoperative, leaving a living child; one (No. 16,066) was operated on at the fifth month and sterilized, left the hospital in fair condition but died in the General Hospital two months later of heart failure; No. 2,417) who was well compensated at the time of labor did well and had a living child; the fourth (No. 13,528) was operated on because of a generally contracted pelvis and had a living child, compensation ing at no time upset while in hospital or since.

Of the seven inductions, one died during labor, as already reported (No. 16,214); three were delivered successfully and had healthy children, while three were delivered successfully but lost thir babies subsequently while in hospital.

To summarize the treatment of these sixty-seven cases: twenty-six (or 40%) had normal labors calling for no assistance and showing no unusual after-effects; sixteen were assisted by forceps; four underwent Cesarian section; seven had induction of labor; fourteen had various surgical procedures which the special circumstances of the case called for. The treatment of the heart condition was mainly by rest in bed, digitalis in the form of the tincture being the drug most commonly used when any further help was considered desirable.—(*Can. Jour. of Med. and Surg.*, Oct., 1923.)

Public Health

Hitting the Nail on the Head

Probably no one in recent months has set forth more succinctly, clearly, and forcefully the need of solving the cancer problem, the public's obligation to furnish the finanhcial means to this end, and the vital necessity of giving the people facts about the disease, than as Dr. Charles P. Childe, President of the British Medical Association and senior surgeon at the Royal Portmouth Hospital, Portsmouth, England. His observations are timely.

Dr. Childe's message was given to the British Medical Association, in the President's annual address delivered at the 91st annual meeting of the Association, held in Portsmouth, and was published as the leading article in the *British Medical Journal* of July 28.

Dr. Childe's message was entitled "Environment and Health." During the early part of his address he said that much concerning the discoveries and advances in medicine in these days find their way into the lay press, and asserted that the public was fully alive to many of the new developments in the progress of medicine. "The advent of a wide awake and informed public," he said, "tends to keep the profession up to the mark. It adds nothing to the dignity, not to mention the security, of the doctor, to be questioned by his patient on some new treatment or phase of a disease he has never heard of, but with which he finds his patient has more than a bowing acquaintance."

After discussing the advances made in the control of infectious diseases, Dr. Childe's paper takes up a number of wholly different ailments. These he says must be controlled by studying and combating the conditions which favor the growth, dissemination, and virulence of the infecting organisms by altering the environment and increasing the natural resistance of the persons who may be exposed. As familiar examples, he cites typhus and typhoid fevers which have disappeared, or are disappearing, following intelligent study and knowledge of the conditions and environment which favor the distribution of these diseases.

He then names as the five most formidable epidemic scourges afflicting northern civilized peoples today, cancer, tuberculosis, rickets, venereal diseases, and alcoholism. The remarks of Dr. Childe are so apt and interesting as to deserve repetition here. In order to suit them to this purpose they are given emphasis by italics and other minor modifications by the editor.

"The humiliating confession must be made," says Dr. Childe, "that we know very little about cancer. Of the nature of the environment favoring its activities we are in complete ignorance. It is neither foul air nor fresh air, neither hardship nor indulgence, neither poverty nor riches. The only things we know about it which are worth knowing are its age incidence, its relation to chronic irritation and the fact that it is, in its beginnings, a local disease and that therefore it can be cured by early removal in those situations where removal is possible.

"This is practically all we know about cancer. I wish to make only two comments. The first is that this knowledge is not enough. In an age which has yielded the secrets of so many diseases it is a point of honour with the medical profession not to rest content till this pressing problem has been solved. With the public it is not only an obligation but, from the point of view of their own interests and safety, a vital necessity to furnish the financial means of solution, and to see that research is not crippled or stinted by any niggardly parsimony.

"The second comment I make is this: The most important fact we know about the disease is that in its beginning it is local, and that its course is a centrifugal spread from its local point of origin. Is that knowledge anything like as productive as it might be? Undoubtedly it is not . . . . . Without resort to any sensationalism some obvious steps could be taken to spread the knowledge of a few simple facts about cancer. This would give a by no means unwarranted ray of hope to the public and would enable some of the victims of this terrible disease to apply in time to have, at all events, a chance of cure or freedom from recurrence, whichever you like to call it."

For ten years the American Society for the Control of Cancer has been giving the people of the country the simple facts mentioned by Dr. Childe, with the result that more and more patients are receiving treatment during the early stages of the disease when the chances of cure are promising.

Eye Hazards

"Eye Hazards in Industrial Occupations," widely known as Publication No. 12 of the National Committee for the Prevention of Blindness, first issued in 1917, has been revised, greatly enlarged, widened in its scope, brought up to date and will be ready for distribution about January first, Lewis H. Carris, Managing Director of the Committee announces.

The bulletin which has been out of print since 1921, will combine in its revised form, all the available information on the subject of eye hazards in industrial occupations. The field research work on the revised edition, which has been carried out under the direction of Mr. Carris, will contain the most comprehensive statistics on eye accidents available. Cooperating with the Committee in the revision of the bulletin were: the National Safety Council, the Safety Institute of America, the American Society of Safety Engineers and leading ophthalmologists.

The volume will be distributed to heads of departments of industrial plants, to engineering colleges and technical schools, and all others interested in accident prevention and health promotion among industrial workers.

There will be twelve chapters in the revised bulletin dividing the contents as follows:

Chapter I, the Introduction, will give a brief resume of eye hazards in industry and of the safety movement, especially as it relates to the prevention of eye accidents, will discuss the proper point of view toward these hazards, emphasizing the need of physical examination of employees, and pointing out that elimination of eye hazards is not only a moral obligation but good business. It will also state the place of the National Committee for the Prevention of Blindness in the general movement for the conservation of the vision of industrial workers.

Chapter II—The Nature and Causes of Eye Injuries—discusses where and how eye accidents happen, and gives detailed data regarding eye injuries in various industries.

Chapter III, devoted to the Eliminating Eye Hazards by Engineering Revision, emphasizes the importance of this newest phase of accident prevention work and describes several typical instances of engineering revision which eliminated hazards and improved the process. It points out that not only are accident prevention results the by-products of efficiency, but that often unlooked for production efficiency is the by-product of some engineering revision carried out primarily or even exclusively for the purpose of accident prevention.

Chapter IV, entitled Industrial Accidents and Safeguards, will take up in detail, hazards and protective methods, all processes where protection is required from large flying objects, from small flying particles, from dust and wind, from splashing metal from gases, fumes and liquids, from reflected light or glare, from injurious radiant energy, etc.

Chapter V is devoted to First Aid Treatment for Eye Injuries.

Chapter VI entitled Correction of Defective Vision, will discuss the condition of eyesight found in the physical examinations of large numbers of working men and women and a description of the experiences of large employers such as the United States Steel Corporation, the Cheney Silk Mills, and the International Harvester Company. It will take up the principal eye defects among factory workers, the effect of poor vision on accident frequency and the importance of good vision in production.

Chapter VII will enumerate the various industrial diseases affecting the eyes and will present the most effective methods of protection against these diseases.

Chapter VIII devoted to Eye Diseases emanating outside of industry, will discuss, among other diseases, trachoma and the responsibility of industry to help eliminate it, means of its detection and preventatives.

Chapter IX describes Industrial Lighting, including lighting codes, artificial lighting, natural lighting and glare.

Chapter X devoted to the Safety Movement, discusses the contribution to the movement for the elimination of the eye hazards of industry which have been made by the National Safety Council, the Safety Institute of America, American Society of Safety Engineers, Underwriters' Laboratories, Local Organizations devoted to safety, and the various state industrial commissions.

Chapter XI headed Education as to Safety, is subdivided into the education of the employer, of the employee and of the State. It cites statistics to show that it is cheaper to prevent accidents than to pay for them, takes up the pros and cons of goggle-wearing, outlines a complete eye protection campaign, presents the best known means of inducing so-called hard boiled workmen to wear goggles and discusses the moral and economic obligation of the state in safety education.

Chapter XII is devoted to the National Committee for the Prevention of Blindness and its work during the past ten years.

Ectogenesis

Members of the profession will be entertained by reading Haldane's article in the August *Century* entitled, "If you were alive in 2123." Among other subjects, he discusses ectogenesis, which would greatly please the author of "Religio Medici" and the author of the "Way of All Flesh," were they alive.

"It was in 1951," he writes, "that Dupont and Swartz produced the first ectogenic child. . . . They obtained a fresh ovary from a woman who was the victim of an aeroplane accident, and kept it living in their medium for five years. Obtaining several eggs from it, they fertilized them successfully." These investigators solved the problem of nutrition and support of the embryos for nine months, and then brought them out into the air.

"France adopted ectogenesis first officially, and by 1968 was producing 60,000 children annually by the new method. Ectogenesis became universal, though opposition to it was strong by certain ecclesiastics.

"The effect on human psychology and social life of the separation of sexual love and reproduction was by no means wholly satisfactory. The old family life had a good deal to commend it. By the new method lactation was induced by the injection of placentin, and thus much of what was best in the former instinctive cycle was preserved. . . . In certain respects our grandparents had the advantage of us. On the other hand the effects of selection have more than counterbalanced the evil. The small percentage of men and women selected as ancestors for the next generation, are so undoubtedly superior to the average that the advance in each generation in any single respect, from the output of first-class music to the decreased convictions for theft, was very startling.

"Had there been no ectogenesis," continues the prophet, "civilization would have collapsed, there is little doubt, owing to the greater fertility of the less desirable members of the population, in almost all countries."

Haldane says that it is perhaps fortunate that the process of becoming an ectogenetic mother of the next generation involves an operation, somewhat unpleasant, but no longer disfiguring or dangerous, and never physiologically injurious. Opposition to it would favor the selectionist movement, and the advantage of a thorough-going selection would be enormous.

"So," he adds, "reproduction, once completely separated from sexual love, mankind will be free in an altogether new sense. In future, it may be possible, by selective breeding, to change character as quickly as institutions. I can foresee," he concludes, "election placards of 300 years hence—if quaint political methods survive—'Vote for Smith and more musicians;' 'Vote for O'Leary and more girls;' or 'Vote for Macpherson and a prehensile tail for your grandchildren.'"—(*Can. J. Med. & Surg.*, Oct., 1923)

The State Department of Health Urges Schick Test for Diphtheria

In a circular to the health officers fo the principal cities and villages of the State, Dr. Edward S. Godfrey, Jr., Director of the Division of Communicable Diseases of the New York State Department of Health asks that the cooperation of local and school authorities be obtained in reaching the parents of children newly admitted to school so that the advantages of the Schick test and the use of toxin-antitoxin for the prevention of diphtheria may be explained to them.

The Department recommends that children from six months to six years of age be immunized by injections of toxin-antitoxin without the preliminary Schick test. Experience shows that the percentage of children who require immunization up to the age of six is so high that it is desirable to immunize them without going to the trouble of making the test. Above the age of six, however, except in smaller places the Schick test should be made whenever practicable and all non-immune children should, with the consent of their parents, be given the protective injection of toxin-antitoxin.

In a recent radio address, the State Commissioner of Health, Dr. Matthias Nicoll, Jr., pointed out that there were over 18,000 cases of diphtheria in New York State last year and 1,400 deaths, most of the deaths being among children under seven years of age. Considering that the toxin-antitoxin mixture is a safe and almost certain preventive of the disease the Department regards it as deplorable that there should still be so many cases and deaths from diphtheria in the State.

"A child who has been given toxin-antitoxin mixture," said Dr. Nicoll, "is protected during the danger period and probably for life. A school in which all of the children are thus protected,—immunized, as we say, never has diphtheria epidemics to contend with.

"We have, so far, been emphasizing the importance of protecting school children but the children under school age are really most susceptible to diphtheria and most often die of it. They need protection at least as much as do the school children. So it is not advisable to wait for the child to go to school, nor, if he is in school is it necessary to wait until the school authorities ask for permission to protect your child. Have your family physician give the toxin-antitoxin mixture. It should be given at any time after the child is six months old. The doctor can get the toxin-antitoxin mixture from the State laboratory or through one of its numerous supply stations."

Venereal Control in Europe

The Queen of Belgium through the aid of Cardinal Mercier has given impetus to the work of venereal disease control in Europe. The following is an excerpt from "Le Matin" of Paris, (1922).

"Little by little prejudices vanish. It has not been a long time that the word syphilis could be used in public without creating a feeling of repugnance, and today this false modesty has disappeared. The journal "*Le Matin*" was the first French journal to dare to use the name of the disease, syphilis.

"As now understood, this seeming disdain and repugnance maintained by the ignorant, who favor the ravages of a curable affection, amounts almost to criminal negligence in a disease that kills, makes blind, deaf and insane persons. The more that science advances, the more syphilis seems to be the most evil of all maladies. Its microbe reveals itself in fifty diverse diseases which have fifty names, but only one cause.

"To think only a few months ago this journal would have announced with considerable prudence that in Belgium two distinguished personages were to lend their aid to a public enterprise against syphilis! It is a truth and a fact. At the appeal of Professor Bayet (M.D.), the Queen of Belgium and Cardinal Mercier have inscribed themselves at the head of the "Belgium National League against the Venereal Peril." Influential financiers were mobilized by the State to fight this scourge. The physicians, people of science, professional persons and others have joined this force.

"The Queen of Belgium and Cardinal Mercier, who gave an example of courage during the world war, come now to give a noble example during peace. And the latter is more difficult because in the time of battle military courage was found in all the big roads, while civil courage today is found but in streets."

Through the efforts of the Queen in cooperation with Dr. A. Bayet, President of the National League against the Venereal Peril, a conference on venereal diseases was held in Brussels at the Palais des Sciences, October, 1922.

Ergophobia

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try to find a remedy for this form of social evil and economic burden, the derelict. There are many other defects and diseases, such as pyorrhoea with the constant absorption of pus and the mental and physical depression that pus intoxication causes; chronic constipation due to inactivity and improper food; apathy due to several causes, among which may be mentioned mental retardation owing to the early age at which many of these individuals were obliged to leave school, loss of moral tone and indifference following years of taunts and contempt, lack of opportunity and stimulus to improve the mind, and the forced association with similarly situated unfortunates.

It is only in recent years that physical and mental causes for adverse social conditions have been sought, and where found, such conditions have been improved. If sociologists should follow up and study the physical and mental defects outlined in this paper they would find that the laziness of the hobo, bum and panhandler is not an ineradicable vice but a curable disease.

Antiluetic Drugs

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data in practically every instance have been substantiated and closely paralleled in the clinical uses of these products.

BIBLIOGRAPHY

A. Bertheim.—1913. "Handbuch der Organischen Arsenverbindungen." Verlag von Ferdinand Enke. Stuttgart.

H. H. Dale.—1922. "Experimental and Clinical Comparison of the Therapeutic Properties of Neosalvarsan," *The Lancet*, April 1922.

G. C. Lake.—1921. "Certain Factors Connected with the Toxicological Testing of Arsphenamine," *Am. J. Syphilis*, Vol. 5, p. 86.

G. C. Lake.—1923. "Parasiticidal Values of Arsphenamine and Neoarsphenamine in 'Arsenic Fast' Strains of Trypanosome," U. S. P. H. S., No. 24, Vol. 38, June 15, 1923, p. 1347.

A Douglas Macallum.—1920. "Examination of Neoarsphenamine," *J. Am. Chem. Soc.*, Vol. 43, No. 3, p. 643.

1922. "Examination of Neoarsphenamine. II. The Constitution of the French Drugs," *J. Am. Chem. Soc.*, Vol. 44, No. 11, p. 2578.

C. N. Myers, and H. B. Corbitt.—1923. "Toxicity and Trypanocidal Activity of Tartro-Bismuthate and Its Relation to the Treatment of Syphilis," *Am. J. Syphilis*, Vol. 7, No. 2, p. 353.